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March 10, 2010

Ms. Sandra J. Paske
Secretary to the Commission
Public Service Commission of Wisconsin
Post Office Box 7854
Madison, WI 53707-7854

Dear Ms. Paske:

Application of Wisconsin Electric Power Company for a Certificate of Authority to Construct and Place in Operation a 50 MW Biomass-Fueled Cogeneration Facility to be Located in the Village of Rothschild in Marathon County, Wisconsin
Docket No. 6630-CE-305

Pursuant to §196.49, Wis. Stats., and PSC 112, Wis. Adm. Code, Wisconsin Electric Power Company is submitting the attached application for a Certificate of Authority allowing it to construct and place in utility service a 50 MW biomass-fueled cogeneration facility to be located in the Village of Rothschild, Marathon County, Wisconsin.

Please contact Mr. Paul Farron at 414-221-3958 for information or if you have any further questions.

Sincerely,

Roman A. Draba
Vice President
Regulatory Affairs and Policy

cc: Mr. Scot Cullen – PSCW
Mr. Paul Rahn - PSCW
Mr. Robert Norcross - PSCW
Mr. Dan Sage – PSCW
Mr. Ben Callan - WDNR

Application of Wisconsin Electric Power Company for a Certificate of Authority to Construct and Place in Operation a 50 MW Biomass-Fueled Cogeneration Facility to be Located in the Village of Rothschild in Marathon County, Wisconsin

Docket No. 6630-CE-305

I. Introduction.

Pursuant to §196.49, Wis. Stat., and PSC 112, Wis. Admin. Code, Wisconsin Electric Power Company ("Wisconsin Electric") hereby requests a certificate of authority allowing it to construct and place in utility service a 50 MW biomass-fueled cogeneration facility to be located in the Village of Rothschild, Marathon County, Wisconsin (the "Project").

Wisconsin Electric also submits this application pursuant to the provisions of §30.025, Wis. Stat., as revised by 2003 Wisconsin Act 89, and has complied with the applicable pre-application requirements. This application is also being submitted to the Wisconsin Department of Natural Resources ("WDNR") and includes the materials necessary to apply for certain water-related permits. This submission will enable WDNR to issue a storm water discharge permit and any required Chapter 30 permits for the project within thirty days of an affirmative decision by the Commission in this docket.

This Application is intended to provide an overview of the Project. More detailed information can be found in the Technical Support Document ("TSD") which is being filed along with the Application and which is incorporated herein by reference.

II. Purpose and Necessity of Project.

The primary reason for the Project is to enable Wisconsin Electric to comply with Wisconsin's Renewable Portfolio Standard ("RPS"), which is contained in §196.378, Wis. Stat. The anchor fuel source proposed for the Project is logging residues generated during forest harvesting activities with a possible supplemental fuel source consisting of waste material

resulting from paper mill pulping operations. Both the proposed anchor and supplemental fuels qualify as "biomass," as defined by §196.378(1)(h)1.g., Wis. Stat.

There are several reasons why Wisconsin Electric is proposing a biomass-fueled facility as the next increment of the renewable resources it needs to procure in order to comply with the RPS mandate:

1. At this time, wind-powered resources and biomass-fueled resources are the most economical means of producing renewable energy. Depending on modeling assumptions and the utility portfolio being analyzed, there may be no material differences in cost between biomass and wind.

2. Resource diversification is a value widely recognized by utility planners as well as by the Commission as recently as December 22, 2009, in its Final Decision in Docket No. 4220-CE-169. The most recent additions to Wisconsin Electric's renewable energy portfolio have been wind-based, in the form of the Blue Sky Green Field project, the Glacier Hills project, and power purchase agreements (PPAs) recently awarded or under consideration. To ensure a diversified renewable portfolio, it may be appropriate for the next increment of renewable capacity to be fueled by biomass.

3. Unlike wind-powered capacity, biomass-fueled units are dispatchable.

4. Unlike wind-powered capacity, the output of which is by nature intermittent, biomass capacity does not raise special issues pertaining to transmission and balancing.

5. Because wind has a significantly lower capacity factor, meeting RPS targets predominantly with wind resources requires more nameplate capacity, which increases the cost and complexity associated with siting and permitting.

The specific biomass-fueled project for which Wisconsin Electric seeks approval would be located in the Village of Rothschild in Marathon County, Wisconsin, on the site of a paper mill owned by Domtar Corporation. The Domtar site was identified by means of a Wisconsin Electric solicitation communicated to Wisconsin-based paper producers by the Wisconsin Paper

Council. Locating biomass-fueled generation on the site of a paper mill that has a pulping operation, as does the Domtar mill, offers a number of advantages, including:

1. Cogeneration technology can be employed to simultaneously produce electricity for the utility and supply process steam to the paper mill with significantly increased efficiency in the use of fuel.

2. Domtar, which has extensive experience in procuring large quantities of wood for its own operations, can be employed to efficiently procure woody biomass -- using accepted standards of sustainability -- to fuel the cogeneration unit.

3. By locating the project on the site of a paper mill, the need to develop a green field site is avoided.

The Project also offers certain "external" benefits. Having the facility as a source for process steam is expected to lower Domtar's production costs. In a globalized marketplace, making itself more competitive helps ensure the viability of the paper mill, which employs 400 people. In addition, as many as 800 additional jobs in the Rothschild area may depend on the continued operation of the mill. The Project is expected to provide 400 construction jobs and the need to supply biomass fuel for the facility will create 150 permanent jobs.

III. Description of the Project.

The proposed cogeneration facility will be designed to produce 50 MW net electric generation as well as provide the full process steam requirements of the Domtar paper mill. In normal operating mode, process steam for the mill will be extracted from the turbine generator, slightly reducing net generation capability. The facility will include a circulating fluidized bed (CFB) boiler, an extraction steam turbine generator, cooling towers, natural-gas fired auxiliary boilers (to supply process steam for the mill if the biomass boiler is out of service or if full electric capability is required), boiler water treatment, fuel receiving, processing, storage, and conveying systems, generator step-up transformers, associated control systems and other improvements. The CFB boiler will be fueled with woody biomass, principally in the form

of logging residue, with natural gas provided for start-up and flame stabilization purposes. Transmission interconnection will be made either directly to the American Transmission Company's system or via Wisconsin Public Service Corporation's distribution system.

IV. Project Cost and Financing.

Based on responses to an RFP for design engineering services, Wisconsin Electric has retained Pöyry, a multinational engineering firm with a large design office in Appleton and experience with more than 160 bioenergy projects worldwide. Also based on responses to an RFP, Wisconsin Electric has retained the Wisconsin-based Boldt Company for construction services. Based on a detailed estimate prepared by Pöyry with support from Boldt, Wisconsin Electric estimates the capital cost of the project to be $255.0 million, in year of occurrence dollars and without AFUDC. Including AFUDC of $33.6 million and CA development costs of $1.5 million, the total gross project cost is estimated to be $290.1 million. The cost of the project will be financed from internal sources and/or from the issuance and sale of the securities.

V. Effect of the Project on Cost of Operation and Reliability of Service.

For reasons explained elsewhere in the Application and in the TSD, when placed in operation the proposed facility will not impair the efficiency of the service provided by Wisconsin Electric; will not provide facilities unreasonably in excess of probable future requirements; and will not add to the cost of service without proportionally increasing the value or available quantity of service.

VI. Alternatives Considered.

Wisconsin Electric has employed the EGEAS model to analyze the economics of the project under various scenarios. The following alternatives to the project were considered as part of the EGEAS analysis:

- **Renewable Alternatives**.

- **Generic biomass**. The generic biomass units in the EGEAS analysis are modeled using the costs and performance characteristics of the Project. The generic units are sized at 50 MW and limited to 400 MW of total generation, based on estimates of the maximum amount of economically viable and technically feasible biomass generation that might be available to Wisconsin Electric throughout the region, including from out-of-state sources. While the modeled cost of generic biomass is based on the cost of the Project, the generic alternative is intended to represent all types of biomass generation, whether acquired through power purchases or construction of new facilities.

- **Wind-based generation**. To compare the cost of the Project against the cost of a competing project, a wind project was modeled with the same energy output as the Project and with the same in-service date. The cost of the modeled wind project was based on the cost of the recently approved Glacier Hills Wind Park.

  In addition, Wisconsin Electric's EGEAS analysis examined generic wind. Generic wind units are sized at 200 MW, have costs based on the cost of the Glacier Hills Wind Park, and can be selected into service at any time during the study period. A total limit of 1000 MW is specified to represent Wisconsin Electric's estimate of the amount of wind economically available in Wisconsin and from out-of-state sources.

- **Solar generation**. The construction cost of solar generation is about $7,500 per KW and Wisconsin-based solar resources would have a capacity factor of fifteen percent. Because of these facts, solar generation is not cost competitive with other forms of renewable energy and was not included as a planning alternative in the EGEAS modeling. However, in selected sensitivities five MW of solar generation are forced into the model in 2012 and another 7.5 MW are forced in 2015.

- **Hydro generation**. Wisconsin Electric's existing hydro generation is included in the EGEAS modeling. However, energy from purchasing existing hydro facilities does not qualify as renewable energy under Wisconsin's RPS and sites for developing new hydro facilities are rarely available. For that reason, hydro generation was not included as a planning alternative in the EGEAS modeling.

- **Fuel cells**. Fuel cell technology is not sufficiently developed to be a viable source of renewable energy. For that reason, fuel cells were not included as a planning alternative.

- **Conventional alternatives.**
  - **Advanced coal**. Advanced coal units are generically modeled as next-generation coal-fired technology, including improved efficiency super-critical coal units or integrated gasification combined cycle units. Both technologies are assumed to be configured for carbon capture, which is not incorporated into the units at the time of construction but could be added later for an additional cost. EGEAS was able to pick coal as bundles of two 515 MW units, with the second unit placed in service one year after the first unit. Because of permitting issues and lead times, advanced coal units are first made available in 2018.

  - **Combined cycle units**. As with the advanced coal units, EGEAS could pick combined cycle units in bundles of two units, with a capacity of 545 MW for each unit. Combined cycle units modeled a firm non-interruptible natural gas supply and the units are first made available in 2016.

  - **Combustion turbine units**. Combustion turbine units are available in 150 MW blocks with up to 750 MW of combustion turbine generation available for construction in any one-year period. The units are modeled with a fixed non-interruptible fuel supply and are first available starting 2012.

  - **Short-term purchase**. The EGEAS modeling includes as a planning alternative one-year 50 MW power purchase contracts that are modeled based on the cost of combustion turbine generation. These contracts are available from 2010 through 2017 for short-term needs until other planning alternatives are available.

  - **Conservation**. Because the purpose of the Project is to comply with Wisconsin's RPS mandate, conservation was not considered to be a planning alternative in the EGEAS modeling.

Using the indicated planning alternatives, Wisconsin Electric modeled a carbon-constrained base case in which the proposed Rothschild unit is forced into service at the end of 2013 and then ran a number of EGEAS sensitivities. The results of the sensitivities are discussed in detail in the Technical Support Document, but one result that is of particular interest compares the net present value cost of the base case with the Project forced in against the net present value cost of a resource plan that forces in generic wind instead of the Project. This comparison shows

the Project to be $36.2 million (NPV) more expensive than the wind alternative. This is approximately 8/100ths of one percent of the total cost of the resource plan and is within the range that has traditionally been considered to be statistical "noise" in EGEAS modeling.

VII. Project Risks.

Wisconsin Electric has taken steps to minimize project risks by, among other things:

- Choosing the standard and well-proven boiler and steam turbine cycle and the circulating fluidized bed (CFB) technology.
- Partnering with a paper mill that has extensive experience in procuring biomass fuel economically and in an environmentally responsible manner.
- Applying for a CA on a timeline such that, if PSCW approval is obtained in 2010, the Project will enter service in time to take advantage of federal production tax credits for renewables.

VIII. Entities Affected by the Proposed Project.

The entities principally affected by the Project are ATC, which may need to provide transmission interconnection; WPS, which may need to provide a connection to transmission and in whose service territory the Domtar mill is located; and the Village of Rothschild and Marathon County, where the Project is located and which will receive shared revenue payments if the Project is approved and built.

IX. Environmental Impact of the Project.

More detail is provided in the Technical Support Document, but a brief summary of the expected environmental impacts of the Project includes the following:

- **Impact on air emissions**. As part of the Project, Domtar will retire all of its existing boilers, which were constructed between 1957 and 1969. As a result, after the new unit is operational the air emissions from the site will be reduced by 30%.
- **Impact on existing vegetation and wildlife populations**. Because the Project site is an industrial property which does

not have resident populations of animals or plant species, no impact is expected on animals or plants.

- **Impact on archeological and historical resources**. The Project will not effect any archeological or historic sites.

- **Impact on endangered, threatened, and special concern species and communities**. Neither the construction nor the operation of the Project is expected to have any impact on endangered, threatened, or special concern species or communities.

- **Impact on waterways and wetlands**. Neither the construction nor the operation of the Project is expected to have any impact on waterways or wetlands.

- **Impact on water source, consumption, and discharge**. Water for operating the proposed facility will be supplied by the existing Wisconsin River intake operated by Domtar. Consumptive water losses from the facility cooling tower and other minor steam losses will be such that the rate of withdrawal will remain within the limit currently authorized by the DNR for the Domtar site.

- **Impact on solid waste**. It should be possible to beneficially reuse much, if not all, of the bottom ash and fly ash that the facility is expected to produce.

- **Impact on agricultural activities**. The Project is not expected to have any impact on agricultural activities.

- **Noise impacts**. Based on a PSCW-sanctioned sound study which has been performed, noise level design goals have been established to ensure that necessary noise abatement features are incorporated into the facility design. Given the existing background noise, designing in accordance with these goals should result in changes in sound level that would be just barely perceptible even to a person who is listening intently.

- **Odor impacts**. There should be no discernible difference in odor from the proposed facility compared to current conditions at the site.

The proposed cogeneration facility will be located entirely within an existing industrial site, which currently hosts electric and steam generation facilities which are owned and operated by Domtar, as well as existing papermaking facilities. As such, the proposed Project is properly classified as a Type II action under Table 2 in Chapter PSC 4, Wis. Admin. Code., because it

could be classified either as the construction of a cogeneration plant at the site of existing electric generation or as construction of an electric facility not otherwise specified under Tables 1, 2, and 3.

X. Proposed Timeline.

In order to take advantage of the federal production tax credit for renewable energy resources, the facility must be placed in service no later than the end of 2013. The boiler lead time is critical to meeting that deadline. Wisconsin Electric issued RFPs for the CFB boiler and the steam turbine generator and has issued limited notice to proceed for those major procurements. If the Commission approves this application by the end of 2010, Wisconsin Electric can finalize the boiler contract and by February, 2011, can release the boiler vendor for procurement and fabrication in order to meet the 2013 in-service target.

XI. Other Information.

A. Relationship with Domtar.

As already explained, the Project is a biomass-fueled cogeneration unit that would be located on the site of Domtar Corporation's Rothschild, Wisconsin, paper mill. The relationship between Wisconsin Electric and Domtar will be governed by several agreements which are described in more detail in the Technical Support Document and which will be filed with the Commission. The key elements of the relationship are the following:

- Domtar will lease to Wisconsin Electric the real estate on which the facility will be located.
- Wisconsin Electric will own the Facility and, in addition to producing electricity, will supply Domtar with its entire process steam requirement at a formula-based price calculated using essentially the same cost allocation methodology that Wisconsin Electric has used for its Valley Power Plant, which produces both electricity and steam.
- Domtar, because of its extensive experience in acquiring wood as feed stock for the paper mill, will act

as Wisconsin Electric's agent in procuring woody biomass to fuel the new facility.

B. Environmentally Sustainable Procurement of Biomass Fuel.

As explained elsewhere, Domtar will act as Wisconsin Electric's agent to procure woody biomass. The fuel supply agreement between Domtar and Wisconsin Electric will require any supplier of biomass with which Domtar contracts to follow the Wisconsin Woody Biomass Harvesting Guidelines. Domtar, as the procurement agent, will work with the appropriate government offices and personnel to monitor biomass fuel harvesting for compliance with the applicable guidelines and appropriate steps will be taken in cases of non-compliance.
The Rothschild mill is certified as to "chain of custody" by both the Forest Stewardship Council and the Sustainable Forestry Initiative. At the corporate level, Domtar has formally adopted a number of policies that strongly support sustainable procurement practices. Wisconsin Electric will gladly accept appropriate order points, similar to order points contained in the Commission's Final Decision in the Bay Front proceeding, Docket No. 4220-CE-169, that will help ensure biomass fuel for the Project is procured in an environmentally responsible way.

CA APPLICATION

TECHNICAL SUPPORT DOCUMENT

ROTHSCHILD BIOMASS COGENERATION FACILITY

PSC DOCKET NO. 6630-CE-305

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ACRONYM LIST

ATC	American Transmission Company
Btu	British Thermal Units
CA	Certificate of Authority
EGEAS	Electric Generation Expansion Analysis System
FAA	Federal Aviation Administration
kV	kilovolt
kWh	kilowatt-hour
MISO	Midwest Independent System Operator
mmBtu	Million Btu
MW	Megawatt
MWh	Megawatt-hour
NRHP	National Register of Historic Places
NWI	National Wetland Inventory
PSC	Public Service Commission of Wisconsin
PTC	Federal Production Tax Credit
RMP	Risk Management Plan
SWPPP	Storm water pollution prevention plan
USACE	United States Army Corps of Engineers
USGS	United States Geological Survey
USFWS	United States Fish and Wildlife Service
DNR	Wisconsin Department of Natural Resources
WDOT	Wisconsin Department of Transportation
WHS	Wisconsin Historical Society
WPDES	Wisconsin Pollutant Discharge Elimination System

1.0 PROJECT DESCRIPTION AND OVERVIEW

This document has been prepared in accordance with Wis. Stats. §196.49, §1.11 and §1.12, Wisconsin Administrative Code Chapter PSC 112 and the guidance provided in Application Filing Requirements for Fossil Fuel Electric Generation Construction Projects in Wisconsin, Version 12. Additional information resulting from consultation with PSC and DNR staff is also provided.

Wisconsin Electric Power Company ("Wisconsin Electric" or "the Company") requests a Certificate of Authority to construct and place into service a 50 MW biomass-fueled co-generation facility on the site of the Domtar Paper Company, LLC ("Domtar") paper mill in the town of Rothschild, Wisconsin (the "Project").

1.1 OWNERSHIP AND OPERATING ENTITY

1.1.1 Generation facilities

Wisconsin Electric will own the co-generation facilities including the circulating fluid bed (CFB) boiler, extraction steam turbine-generator, cooling towers, auxiliary boilers, boiler water treatment, fuel receiving, processing, storage, and conveying systems, generator step up transformers, associated control systems and other improvements.

Wisconsin Electric is partnering with Domtar, and will sell Domtar process steam from the facility. Either Wisconsin Electric, or Domtar under contract to Wisconsin Electric, will operate the co-generation facility. The property where the facility will be constructed is owned by Domtar, and will be leased to Wisconsin Electric. Domtar will provide make up water, condensate return, and waste water treatment facilities and will continue to own and operate these facilities.

The relevant agreements between Wisconsin Electric and Domtar are described in Section 1.4.4, Commercial Agreements.

1.1.2 Transmission interconnection facilities

The Company is investigating two possible interconnection paths for the facility, a 115 kV interconnection through American Transmission Company ("ATC") and the Midwest ISO (MISO), and a 46 kV distribution interconnection with Wisconsin Public Service ("WPS").

For the ATC option, a new 115 kV substation will be constructed on the Domtar property, to connect to the 115 kV transmission line Z52 located approximately ½ mile west of the property. This interconnection request is MISO queue number J040, and is currently in the Facilities Study phase of the queue process. ATC will construct, own and operate the substation. The transmission interconnection facilities include the 115 kV bus, circuit breakers, and a 115 kV connection to Z52. Domtar owns the property on which the substation will be constructed, and will grant exclusive and perpetual easements to ATC for the proposed transmission facility and any future expansion. The parcel is sufficient to

accommodate the ATC substation and the Project's 13.8/115 kV generator step up transformer, with sufficient space remaining for possible future expansion.

For the WPS option, the existing WPS 46 kV line from the intersection of Military Road and Hwy. Business 51 to the existing mill substation will be rerouted to a new 46 kV substation located adjacent to the power plant, on Domtar property. The Project will include installation of a 13.8kV/46kV transformer to connect to the 46kV substation. A new 46 kV line will be routed to the Domtar mill substation from the new plant substation. Wisconsin Electric made an interconnection request to WPS on November 24, 2009, and is currently in the Engineering Study process at WPS. WPS has confirmed that its 46 kV system has the capacity to accept the full load of the facility. WPS will be performing system stability studies with ATC to identify any stability impacts due to the interconnection. If the Project uses the WPS option, Domtar will grant WPS an exclusive and perpetual easement for any facilities proposed for Domtar property.

Transmission reports received to date are contained in Appendix S.

1.2 PROJECT NEED/PURPOSE

The Composition of Wisconsin Electric's Current Renewable Energy Portfolio
Wisconsin Electric strives to maintain a diversified renewable energy portfolio that achieves a cost competitive balance between owned generation and purchased energy. Table 1.2-1 summarizes the portfolio for 2009. The portfolio was weighted toward wind, hydro and biomass generation with purchases accounting for about one-third of the Company's renewable generating capability. Total renewable generation was about 1,100,000 MWh with about 800,000 MWh available to meet the Wisconsin RPS. Since the RPS requirement for 2009 was 2.27% of Wisconsin Retail Load (about 590,000 MWh), the Company was able to bank a surplus of more than 210,000 MWh for use in future years.

Table 1.2-1 Current Renewable Energy Portfolio (2009)

	Owned Renewable Generation			Renewable Energy Purchases				
Type	Capacity (MW)	Energy (MWh/yr)	RRC Bank Credits	Energy (MWh/yr)	RRCs (MWh/yr)	Source Generation	Total	Percent
Wind Generation	147.3	322,988		53,123	93,721	Wind Generation	469,832	42.9%
Hydro Generation	55.0	383,563		3,144	0	Hydro Generation	386,707	35.3%
Biomass Generation	0.0	0		238,757	0	Biomass Generation	238,757	21.8%
Solar Generation	0.0	0		651	0	Solar Generation	651	0.1%
RRC Bank	N/A	N/A	1,022,361	N/A	N/A			0.0%
Total	202.3	706,551	1,022,361	295,675	93,721	Total	1,095,947	100.0%

Energy from Owned Generation:		706,551	64%
Energy from Energy Purchases:		389,396	36%
Total 2009 Renewable Energy:		1,095,947	100%
Less: Energy for Tomorrow Purchases:		177,000	
Sub-total		918,947	
Allocation to Michigan and FERC:		114,868	
Available to Meet Wisconsin RPS:		804,079	
Less: 2009 RPS Requirement		586,663	
Surplus in Current Year Resources		217,416	
Use of Banked RRCs		0	

The Project is not needed to meet Wisconsin Electric's near-term energy or capacity needs. The primary purpose of the Project is to comply with Wisconsin's RPS contained in Wis. Stat. 196.378. The project is a qualified RPS resource. The proposed fuel source proposed for this project is "biomass" as defined by Wis. Stat. 196.378(1)(ar), and biomass is a "renewable resource." Wis. Stat. 196.378(1)(h)1.g.

The RPS requires each "electric provider," which includes an electric utility such as Wisconsin Electric, to meet an increasing percentage of its Wisconsin retail energy sales with renewable energy. This percentage is added to the Company's historical "baseline renewable percentage" of renewable energy production.

The RPS defines the "baseline renewable percentage" as the average of the energy provider's renewable energy percentage for 2001, 2002, and 2003. Wisconsin Electric's baseline renewable percentage is 2.27%. By 2010, the RPS requires each electric provider to increase its renewable energy percentage so that it is at least 2 percentage points above the provider's baseline. For Wisconsin Electric, the renewable energy percentage required for 2010 is 4.27% or approximately 1.1 million MWh based on the Company's most recent load forecast. The RPS percentage increases again in 2015, when each electric provider must increase its renewable energy percentage so that it is at least 6 percentage points above the provider's baseline. For Wisconsin Electric, that percentage is 8.27% or approximately 2.2 million MWh. Table 1.2-2 shows Wisconsin Electric's RPS requirement in terms of a percentage of Wisconsin retail sales as well as in MWh for each year through 2025.

Table 1.2-2 RPS Need Forecast – Current Requirement

	RPS Requirement				Generation Required to Eliminate the RPS GAP	Capacity
	Percent	MWh	Renewable Energy Available	RPS Shortfall	Type	Megawatts
2010	4.27%	1,075,264	1,075,264	0		
2011	4.27%	1,051,169	1,051,168	0		
2012	4.27%	1,024,757	1,024,757	0	Glacier Hills (162 mw) and Solar (5.0)	,167.0
2013	4.27%	1,030,688	1,030,688	0	Rothschild Biomass	50.0
2014	4.27%	1,041,424	1,041,423	0	New Wind and Solar (7.5 mw)	207.5.0
2015	8.27%	2,038,703	1,301,130	737,573		
2016	8.27%	2,057,396	907,580	1,149,816	New Wind	200.0
2017	8.27%	2,071,207	904,680	1,166,527	New Wind	100.0
2018	8.27%	2,086,755	901,923	1,184,832		
2019	8.27%	2,097,708	899,781	1,197,927		
2020	8.27%	2,112,259	891,324	1,220,935		
2021	8.27%	2,124,317	863,640	1,260,677		
2022	8.27%	2,140,972	843,121	1,297,851		
2023	8.27%	2,157,757	840,683	1,317,074		
2024	8.27%	2,174,674	838,177	1,336,497		
2025	8.27%	2,191,724	835,603	1,356,121	New Wind	100.0

NOTES:
1- This analysis includes a 50 megawatt wind PPA in 2010 through 2014 and the Glacier Hills Wind Park.

Table 1.2-2 also shows the renewable energy that is applied to the RPS. Included in this figure is the use of banked Renewable Resource Credits ("RRC"). Neither the RPS requirement figures nor the renewable energy applied to meet the Wisconsin RPS include the amount of renewable energy that is allocated to Michigan retail load, the amount allocated to

FERC Jurisdictional Accounts, or renewable generation acquired for Energy for Tomorrow customers.

Table 1.2-2 shows a shortfall in meeting the RPS requirement beginning in 2015, once RRC banks have been exhausted. Wisconsin Electric's current renewable energy capability available to meet the 2010 RPS requirement is about 920,000 MWh as compared to the 2010 RPS requirement of about 1,075,000 MWh. In 2015 the RPS requirement will increase to about 2,040,000 MWh and Wisconsin Electric's renewable generation available to meet RPS requirements will have decreased to about 860,000 MWh.

To fill this deficit beginning in 2010 Wisconsin Electric has a bank of about 1,100,000 RRCs that allow the Company to meet the RPS requirement through 2014. Unless the Company adds new renewable resources to its portfolio, the RRC bank will be depleted in 2015, and the Company will fail to meet the RPS requirement by about 740,000 MWh.

Table 1.2-2 also identifies new renewable generation projects that would be required in order to meet the Company's RPS requirement through 2025. These assets include the Glacier Hills Wind Park, which received Commission approval in January of this year, the proposed Rothschild Biomass project, two solar projects to be in-service by the end of December of 2012 and 2014, and another 300 megawatts of undesignated wind projects. As a matter of convention undesignated wind generation is used to fill any renewable energy supply deficiencies in meeting the RPS. However, other types of available and cost effective renewable generation could be used to meet RPS requirements in place of wind generation. Aside from the Glacier Hills Wind Park and the proposed Rothschild biomass facilities, the remaining projects could be acquired in the form of Company owned generation or in the form of purchases.

As reflected in Table 1.2-3, in 2010 Wisconsin Electric's use of purchased energy increased from less than 400,000 MWh to about 545,000 MWh. For 2010 purchases will account for about 44% of Wisconsin Electric's renewable portfolio. During 2010 the Company's RPS requirement increased from about 590,000 MWh to more than 1,075,000 MWh due to an increase in the RPS requirement from 2.27% of Wisconsin Retail Load to 4.27% of Wisconsin Retail Load. Although the size of the Company's renewable resources increased during 2010, Wisconsin Electric expects to draw down its bank of RRCs to meet the current RPS requirement. The Company expects to continue to use banks to meet the RPS requirement until 2013.

Table 1.2-3 Current Renewable Portfolio (2010)

	Owned Renewable Generation			Renewable Energy Purchases				
Type	Capacity (MW)	Energy (MWh/yr)	RRC Bank Credits	Energy (MWh/yr)	RRCs (MWh/yr)	Source Generation	Total	Percent
Wind Generation	147.3	322,387		203,122	86,435	Wind Generation	611,944	48.9%
Hydro Generation	55.0	383,563		2,816	0	Hydro Generation	386,379	30.9%
Biomass Generation	0.0	0		252,199	0	Biomass Generation	252,199	20.2%
Solar Generation	0.0	0		1,035	0	Solar Generation	1,035	0.1%
RRC Bank	N/A	N/A	1,157,992	N/A	N/A			0.0%
Total	202.3	705,950	1,157,992	459,172	86,435	Total	1,251,557	100.0%

Energy from Owned Generation:		705,950	56%
Energy from Energy Purchases:		545,607	44%
Total 2010 Renewable Energy:		1,251,557	100%
Less: Energy for Tomorrow Purchases:		142,000	
Sub-total		1,109,557	
Allocation to Michigan and FERC:		188,736	
Available to Meet Wisconsin RPS:		920,821	
Less: 2010 RPS Requirement		1,075,264	
Shortfall in Current Year Resources		-154,443	
Use of Banked RRCs		154,443	

Proposed Changes in RPS Requirements

There are several legislative proposals pending to increase RPS requirements beyond the levels of the current Wisconsin RPS. Passage of a more stringent RPS requirement would heighten the need for the Project. In January 2010, the Clean Energy Jobs Act (CEJA) was introduced in the Wisconsin legislature. The bill proposes to increase the Wisconsin RPS to

25% by 2025.[1] Competing U.S. house and senate bills propose similar increases. Since the CEJA proposal is arguably more stringent than the federal proposals, it will be the focus of this comparison.

The CEJA RPS maintains the same requirement as the current RPS in years 2010 through 2012. In 2013 the CEJA RPS increases two years earlier than the current RPS to a level of 8.27%. Then in 2020 the CEJA RPS increases to 18.27%, whereas the current RPS is capped at 8.27%. Finally, in 2020 the CEJA RPS increases to 23.27% and remains at that level thereafter.

Table 1.2-4 shows the impact of proposed RPS legislation on Wisconsin Electric's RPS planning.

Table 1.2-4 RPS Need – Accelerated RPS

	RPS Requirement			Annual	Generation Required to Eliminate the RPS GAP	
	Percent	MWh	Renewable Energy Available	RPS Shortfall	Type	Capacity MW
2010	4.27%	1,075,264	1,075,264	0		
2011	4.27%	1,051,169	1,051,168	0		
2012	4.27%	1,024,757	1,024,757	0	Glacier Hills (162 mw), New Wind (100 mw), , Solar (5 mw)	267.0
2013	8.27%	1,996,204	1,520,448	475,756	Rothschild Biomass (50 mw), New Wind (200mw)	250.0
2014	8.27%	2,016,997	994,710	1,022,286	New Wind, Solar (7.5 mw)	207.5
2015	8.27%	2,038,703	864,983	1,173,720		
2016	8.27%	2,057,396	909,555	1,147,841		
2017	8.27%	2,071,207	906,658	1,164,549	New Wind	200.0
2018	8.27%	2,086,755	903,901	1,182,854	New Wind	200.0
2019	18.27%	2,097,708	901,760	1,195,948	New Wind	200.0
2020	18.27%	4,666,381	893,304	3,798,618	New Wind	200.0
2021	18.27%	4,693,020	865,622	3,827,398	New Wind	200.0
2022	18.27%	4,729,814	845,105	3,884,708	New Wind	200.0
2023	18.27%	4,766,895	842,668	3,924,227	New Wind	200.0
2024	18.27%	4,804,268	840,163	3,964,105	New Wind	400.0
2025	23.27%	6,167,038	837,591	5,329,448	New Wind	200.0

NOTES:
1- This analysis includes a 50 MW wind PPA in 2010 through 2014 and the Glacier Hills Wind Park.

Thus, under the CEJA RPS, Wisconsin Electric is able to meet the RPS requirement through 2012, instead of 2014. From 2015 through 2019 the requirements are the same. In 2020 the current RPS requirement is about 2.1 million MWh. The requirement under the CEJA RPS

[1] The CEJA would require that by 2020, 30% of a utility's renewable generation requirement would have to be met with in-state resources. That number would climb to 40% by 2025.

jumps to about 4.6 million MWh. Finally, the CEJA RPS requirement increases to about 6.1 million MWh in 2025 as compared to 2.2 million MWh under current legislation.

1.2.1 Expected annual energy output for the project

Based on the EGEAS modeling results, the project is expected to produce about 310,000 MWh per year of energy.

1.2.2 Monthly demand and energy forecast

Wisconsin Electric's load forecast used in the EGEAS modeling was updated on February 9, 2010 and is presented below:

Table 1.2-5 Wisconsin Electric Load Forecast

Year	Demand	Energy	Year	Demand	Energy
2010	6,374	30,276,793	2025	6,806	34,215,805
2011	6,440	30,668,955	2026	6,888	34,466,496
2012	6,189	31,272,195	2027	6,971	34,719,148
2013	6,065	31,567,436	2028	7,054	34,973,773
2014	6,143	31,822,553	2029	7,139	35,230,391
2015	6,093	32,052,674	2030	7,225	35,489,016
2016	6,139	32,148,064	2031	7,312	35,749,660
2017	6,223	32,466,762	2032	7,400	36,012,344
2018	6,259	32,514,570	2033	7,489	36,277,078
2019	6,335	32,751,965	2034	7,579	36,543,883
2020	6,411	32,991,215	2035	7,671	36,812,773
2021	6,488	33,232,332	2036	7,763	37,083,770
2022	6,566	33,475,336	2037	7,856	37,356,879
2023	6,645	33,720,238	2038	7,951	37,632,129
2024	6,725	33,967,059	2039	8,047	37,909,523

1.2.3 25-year optimal generation expansion plan

EGEAS Modeling Results for the Rothschild Biomass Project

Study Design:

Wisconsin Electric conducted the economic modeling for the Project using the EGEAS generation expansion planning software program. The program constructs an optimal 30-year generation expansion plan to match projected demand, which was based on Wisconsin Electric's February 9, 2010 load forecast. In addition to the initial 30-year study period, a 30-year extension period is also modeled to address terminal value considerations with generation that may be added in the later years of the study period. Wisconsin Electric's generation fleet is programmed into the model, along with the cost profile of new generation alternatives (i.e. planning alternatives). Then, as demand increases over the years, the program will choose among different generation alternatives to meet that demand in the most cost effective manner. Future electric power generation alternatives are selected by EGEAS based on how well they fit with existing generating resources considering their construction cost and operating cost characteristics. A key consideration in determining the operating cost

of existing units and new generation is the cost of fuel. Wisconsin Electric's August 2009 fuel forecast was used for this study. The forecast is shown in Appendix C.

To determine the cost competitiveness of the Project compared to an equivalent amount of wind generation, a representative generating unit was created with the cost and operating characteristics of the Project. Another representative generating unit was created with the cost and operating characteristics of the recently licensed Glacier Hills Wind project. The wind generating unit was then sized to produce the same amount of renewable energy as the Project. Then one run was conducted forcing the Project into service at the end of 2013. The EGEAS model then built a least cost expansion plan that included the Project and determined the system cost of that plan. A second EGEAS run was conducted forcing in the equivalently sized wind unit at the end of 2013. EGEAS then built a least cost expansion plan that included the wind unit and calculated the system cost of that plan. By comparing the cost of the two plans, the cost difference between wind and biomass was determined. This method of comparing the Project to an equivalent wind facility was then duplicated under a number of different sensitivities to determine how the two types of generation would perform under different operating environments.

Factors Affecting Wind and Biomass Generation and the EGEAS Analysis

Several differences between wind and biomass generation are important to consider when modeling the economics of the two technologies. These differences are discussed below.

Capacity: Since biomass is a dispatchable form of generation, all of its capacity can be used for reserve margin planning purposes. Any excess over the minimum reserve requirement can be sold into the wholesale market. Since EGEAS models a closed generation system, the value of capacity may not always be fully represented by the model. By contrast, since wind is not dispatchable, only 8% of its capacity is used for reserve planning or potential wholesale capacity sales. Therefore, any additional value of capacity that EGEAS cannot capture is more significant for biomass than for wind.

Other Dispatch Related Issues:
The dispatchable nature of biomass allows it to produce energy at the most economically desirable times. By comparison, the energy produced from wind generation is based on the hourly load profile in the model, which often generates energy during off-peak periods. Depending on the way the cost of biomass and wind compare to the marginal cost of generation, the dispatchable nature of biomass can have an impact on the cost comparison between biomass and wind generation.

Regulation Cost:
Since wind is not dispatchable, other system resources must provide additional regulation to accommodate the variability of wind generation. Since there is limited experience managing electrical systems with significant amounts of wind generation within MISO, the exact cost impact of additional regulation is not known with certainty. Several studies have been conducted into the effect of wind generation on system regulation. Wisconsin Electric commissioned a wind integration study in 2003, which was conducted by Electrotek

Concepts. The Minnesota Public Utilities Commission commissioned a wind integration study in 2006, which included the impact of the MISO market. The Wisconsin Electric study estimated the cost of wind regulation at between $1.90 and $2.92 per megawatt hour (at 2003 cost levels) depending on the amount of wind added to Wisconsin Electric's system. The Minnesota Wind Integration Study estimated additional regulation costs to be in the range of $2.11 to $4.41 per megawatt hour (at 2005 cost levels). The EGEAS modeling for Project adds an additional $2.26 per megawatt hour- (at 2010 cost levels) to the cost of wind generation, which is in the low end of the range of both studies.

Carbon Legislation:

The impact of carbon legislation was included in the EGEAS modeling. Allowance prices were developed from the "Energy Market and Economic Impacts of H.R. 2454, The American Clean Energy and Security Act of 2009" white paper published by the Energy Information Administration, Office of Integrated Analysis and Forecasting in August of 2009. The prices used in the EGEAS modeling are from Table ES-1 on page xi and Figure ES-3 on page xiii.

Carbon dioxide allocations were based on Wisconsin Electric's interpretation of the American Clean Energy and Security Act legislation (HR-2454), and the Company's share of national energy and national CO_2 emission information from the U.S. Department of Energy and U.S. Environmental Protection Agency, respectively. CO_2 allowance cost and allocation assumptions are included in Table 1.2-6.

Table 1.2-6 Carbon Legislation Assumptions Used in EGEAS

	Allowance Price per Metric Tonne	System CO_2 Limit in Metric Tonnes
2010	$0.00	0
2011	$0.00	0
2012	$0.00	0
2013	$0.00	0
2014	$30.72	16,478,484
2015	$33.26	16,168,240
2016	$35.92	15,951,704
2017	$38.68	15,640,352
2018	$41.59	15,331,909
2019	$47.08	15,020,557
2020	$52.82	14,712,115
2021	$58.82	14,266,911
2022	$65.09	13,824,616
2023	$71.63	13,382,321
2024	$78.45	12,937,117
2025	$85.58	12,494,822
2026	$93.01	10,124,123
2027	$100.76	7,314,447
2028	$108.84	4,689,312
2029	$117.26	2,251,774
2030	$126.03	0
2031	$135.17	0
2032	$144.68	0
2033	$154.59	0
2034	$164.90	0
2035	$175.63	0
2036	$186.80	0
2037	$198.41	0
2038	$210.49	0
2039	$223.04	0

Planning Alternatives:

When the EGEAS program determines the least cost generation expansion plan, it will develop a construction schedule thirty years into the future using the different types of generating units that it is given to choose from. The cost and operating characteristics of these planning alternatives are described in Section 1.4.6. In brief, these are the planning alternatives used in the modeling:

- Combustion turbine peaking units of 150 megawatts.
- Advanced coal base load units of 500 megawatts.
- Combined cycle units intermediate load units of 545 megawatts.
- Short-term purchase peaking units of 50 megawatts.
- Generic biomass renewable energy units of 50 megawatts.
- Generic wind renewable energy units of 200 megawatts.

Study Sensitivities and Results:

A number of sensitivities were modeled to identify the cost of the Rothschild biomass project in comparison to the cost of wind generation with the same in-service year and energy production. The sensitivities are described below. Unless noted, the sensitivities include the impact of potential carbon dioxide legislation. Since we are defining the cost of the next increment of renewable energy needed to meet Renewable Portfolio Standard requirements, renewable generation needed to maintain RPS compliance is not included in to the model (with the exception of Sensitivity 5).

Senstivity-1-B: Forced-in Rothschild Biomass: The Rothschild unit was forced into service at the end of 2013. The net present value ("NPV") was $45,519.3 million.

Sensitivity-1-W-Low: Low-Priced Forced-in Wind Alternative: The 129 megawatt generic wind alternative was forced into service at the end of 2013. The price and operating characteristics of the wind unit are based on those of the Glacier Hills Wind Park, and constitute Wisconsin Electric's estimate of a Low Wind Cost Sensitivity. The NPV was $45,483.1 million.

The Rothschild biomass project is $36.2 million NPV more expensive than the wind alternative.

Sensitivity-1-W-Mid-Priced Forced-in Wind: This is the mid-priced wind sensitivity with the in-service construction cost of new wind generation as determined from an analysis done by ScottMadden Consulting. The NPV was $45,495.9 million.

The Rothschild biomass project was $23.4 million more expensive than a comparable mid-priced wind project.

Sensitivity-1-W-High-Priced Forced-in Wind: The high wind cost sensitivity uses an in-service cost per kilowatt for wind from an analysis conducted by ScottMadden Consulting. The NPV was $45,589.9 million. The Rothschild project was $70.6 million less expensive than the comparable high-priced wind project.

Sensitivity 2-B-1: High Biomass Fuel Prices: Higher priced biomass fuel estimates were applied to the modal. The system NPV for forced-in biomass changed to $45,869.8 million, which is an increase of $350.5 million more than the Forced-in Biomass sensitivity (1-B).

Sensitivity 2-B-2 Low-Priced Biomass Fuel Prices: Lower priced biomass fuel estimates were applied to the model; the NPV for forced-in biomass fell to $45,239.0 million; $280.2 million less than the Forced-in Biomass sensitivity (1-B).

Sensitivity 3: No CO-2 Legislation – No Biomass or Wind Alternative: Sensitivity 1 was re-run removing the impact of carbon dioxide legislation from the model. Then sensitivities were run comparing the Rothschild facility to the low-priced wind alternative. The system NPV was $29,135.3 million.

Sensitivity 3-B No CO-2 Legislation – Biomass Forced-in: Biomass was forced into service at the end of 2013. The system NPV changed to $29,456.1 million.

Sensitivity 3-W No CO-2 Legislation – Low-Priced Wind Forced-in: Forcing-in the wind alternative unit changed the system NPV to $29,290.4 million. Forced-in wind was $165.7 million less expensive than biomass in the No CO-2 legislation sensitivity.

Sensitivity 4-B No Biomass Steam Host: The impact of losing the steam host in the first year of operation was identified in this sensitivity. The changes in the cost and operating assumptions for the project are shown in the Renewable Generation Alternatives section, Appendix C: "Table 2-A: Rothschild Biomass EGEAS Cost Inputs – No Steam Host Sensitivity" The system NPV changed to $45,514.8 million for a $4.5 million cost decrease from the forced biomass sensitivity (1-B).

Sensitivity 5-RPS-B: RPS Compliance Cost with Biomass: In this sensitivity the Rothschild biomass project was forced-in along with the amount of wind units needed to achieve RPS compliance through the study period. Appendix C, Table 6 shows the compliance plan used for the RPS compliant sensitivities. The generic wind planning alternative limitations were then reduced by the amount of wind that was forced in to achieve RPS compliance. The system NPV was $45,492.9 million.

Sensitivity 5-RPS-W: RPS Compliance Cost with Low-Priced Wind: The wind alternative is forced into the RPS compliant sensitivity in place of the Rothschild biomass project. The system cost was $45,259.8, $233.1 million less than the forced-in biomass RPS sensitivity (5-RPS-B).

Sensitivity 6: MISO Market Effect: The MISO market was modeled using a forecast of future LMP prices into a non-carbon constrained EGEAS sensitivity. The system NPV was $28,551.8 million.

Sensitivity 6-B: MISO Market – Biomass Forced-in: The Rothschild biomass project was forced into the MISO market base case. The system NPV changed to $28,894.8 million.

Sensitivity 6-W: MISO Market – Low-Priced Wind Forced-in: The alternative wind project was forced into the base case. The system NPV was $28,706.6 million, which is $188.2 million less than the Rothschild biomass project.

An EGEAS comparison of the Rothschild Project to the Wind Alternative is summarized in Appendix C, Table 7. The Expansion Plan results for the sensitivities above are included in Appendix C in Table 8.

Conclusion:
The EGEAS analysis identifies a cost difference of about $36.2 million associated with the Rothschild biomass project in comparison to a similarly sized wind project placed in-service in the same year as the Rothschild project. The wind prices that were used for comparison to

the Rothschild project were at the low end of Wisconsin Electric's expectation of the cost of building new wind generation. If the medium and high cost wind estimates from the ScottMadden study are used, the Rothschild project becomes even more competitive with the cost of comparable wind generation.

The EGEAS analysis uncertainty is usually estimated to be $50 million (or 0.1% of the system NPV in this analysis) which means comparative differences of less than $50 million are not considered significant.

Other factors were identified in this text that favor the Rothschild project, but could not be reflected in the EGEAS analysis. These include the ability to dispatch based on the cost of renewable energy as opposed to incremental system production cost, and the value of capacity that could be sold into the market. These factors further mitigate cost differences between the Rothschild Biomass Project, making it a desirable alternative to wind generation.

Also not reflected in the EGEAS analysis is the value of the jobs created by the project, and the increased efficiency the project provides the Domtar paper mill through the Project's steam generating capability. Additionally, the renewable energy produced by the project would qualify as in-state renewable energy under currently proposed accelerated RPS legislation.

1.2.4 Purchased power

In the EGEAS modeling, future power purchases are dealt with in two ways. A short-term one-year 50 megawatt power purchase is offered as a planning alternative in EGEAS, which can be selected by the model when optimizing the expansion plan. Secondly, longer-term transactions such as 20- or 30-year PPAs are modeled directly as planning alternatives since EGEAS doesn't differentiate between owned generation and IPP purchases. Therefore, when additional generation is selected by EGEAS, the need can either be met by constructing new generation in the utility or through a PPA.

1.2.5 Plant retirement forecast over next 20-25 years

Plant Retirements:
A number of generating units are scheduled to retire during the EGEAS study period. They are:

- Edgewater Unit #5: 2011 (sale of unit)
- Oak Creek Units 5 through 8: 2031
- Point Beach Nuclear Plant PPA, Unit #1: 2031
- Point Beach Nuclear Plant PPA, Unit #2: 2033

In the Glacier Hills Wind Park CPCN application, which was filed on October 24, 2009, retiring units were listed as Oak Creek units 5 through 8, Oak Creek Unit #9 and Presque Isle units 3 and 4. Since that time Oak Creek unit #9 and Presque Isle units 3 and 4 have been retired. The Point Beach units were not shown as retiring, since they are now under PPA

contracts, but have been added in EGEAS with dates associated with their PPA terms as if they are still owned units.

1.3 SUPPLY ALTERNATIVES

To meet the RPS, Wisconsin Electric will have to rely on a diverse portfolio of renewable energy sources as they become available in appropriate quantities, cost and technical maturity. As shown in Table 1.2-3, Wisconsin Electric needs a significant amount of additional renewable generation to meet the state RPS. Currently, the Company's analysis shows that woody biomass and wind generation offer substantial quantities of renewable energy, which may be cost-effectively developed in the near term.

As described below, Wisconsin Electric fully evaluated supply alternatives, including a "no-build" option. As a result of this process, the Rothschild project was identified as the preferred project alternative and provides a significant step toward meeting Wisconsin's RPS.

1.3.1 Supply Alternatives

Wisconsin Electric continues to develop a portfolio of renewable resources to meet mandated renewable energy requirements. Recently wind has been the renewable resource the Company has utilized to increase its renewable generating capabilities. Wind generation by its nature is variable, while Wisconsin Electric is required to meet customer usage as it occurs. In addition, wind resources in Wisconsin are stronger at night than during the day and stronger in winter than summer. This is the exact opposite of when Wisconsin Electric customers use the most electric energy. To match customer demand with wind generator output, conventional generating resources are required. The Rothschild project is a controllable and dispatchable generating resource, with the ability to increase and decrease electric generation based on commands from a control center, rather than the speed of the wind.

Diversity of supply is generally accepted as a sound business strategy from investment portfolios, to fuel supplies and it certainly applies to generating resources. In its Final Decision, dated December 22, 2009, the PSCW espoused the benefits of diversity within a renewable generation portfolio by approving Northern States; Power - Wisconsin's request to construct a biomass gassifier at its Bay Front Generating Facility. The Commission specifically noted:

> NSPW's project has other advantages over wind options because it will diversify NSPW's renewable energy portfolio, including the addition of a significant amount of non-variable and dispatchable renewable generation. As the need for renewable energy increases, whether from renewable resource mandates or from greenhouse gas controls, widening the diversity of each utility's renewable resources by adding alternatives such as biomass becomes economical and desirable. Biomass-fired generation will

> increase Wisconsin's opportunities to promote the state's economy, and making Wisconsin's electric system more self-sustaining will make it more secure.
>
> The proposed project will also utilize existing infrastructure and, unlike wind power, will not require a greenfield site for the project.
>
> The record demonstrates that NSPW's project is cost-effective and technically feasible. It offers additional advantages of investing capital in the state, furthering the development of renewable resource technology, retaining Wisconsin jobs, diversifying Wisconsin's electric system, improving energy security because of the proximity of fuel to the plant, and increasing demand for forestry products.[2]

Adding a woody biomass co-generating plant to its portfolio will serve to further diversify Wisconsin Electric's fleet.

The State of Wisconsin is fortunate to have substantial biomass resources, a fact emphasized by the 2008 Governor's Task Force on Global Warming report. As described in Section 1.14 Wisconsin Electric undertook several studies evaluating various biomass resources as a primary fuel for electric energy production. Woody biomass was identified as the fuel of choice.

In the early 1990s a number of woody biomass plants were constructed throughout the country. The facilities were generally greenfield plants, typically 25-35 MW in capacity and electricity was their only energy product. The cost of energy from this type of biomass plant has historically been higher than for wind generation and Wisconsin Electric's analyses (Appendix R, Initial Pro forma – Cost Estimates) support this conclusion.

As an alternative to greenfield biomass, Wisconsin Electric looked to partner with the paper industry, which is the nation's single largest consumer of woody biomass and generator of renewable energy. The State of Wisconsin is the largest producer of paper products in the nation with over 50 operating paper mills. Paper mills present the opportunity for a co-generation facility as they have significant process steam requirements. This increases the overall energy efficiency of the Project by a factor of two relative to an electric only process. A paper mill site is effectively brownfield by nature as it is an existing industrial site with existing infrastructure which can be shared with a new generating plant. The paper industry has the skills, knowledge, and history to acquire low cost biomass in a responsible and sustainable fashion without detrimental effects on its pulpwood feedstock.

It is the combination of these benefits which allow the Project to be competitive with wind.

1.3.1.1 Renewable energy options considered/ why not selected

[2] Final Decision in Docket No. 4220-CE-169: Northern States Power Company - Wisconsin, an Xcel Energy Company, Request for Approval to Construct a Biomass Gasifier at its Bay Front Generating Facility. December 22, 2009. p 13.

As alternatives to the Project, Wisconsin Electric considered adding wind, hydro, solar, fuel cell and other biomass generation and a "no-build option. As outlined below, the Company determined that the Project was the optimal means for meeting the next increment of Wisconsin's RPS requirements.

Wind Generation:
Wind generation is the most widely available form of renewable generation and one of the most cost effective. For this reason wind energy dominates the Company's renewable portfolio and will likely continue to be a significant source of additions to Wisconsin Electric's renewable portfolio in the future, whether in the form of purchased power or owned generation. While wind generation is often the renewable energy of choice, it does suffer from a number of disadvantages:

- Limited Availability within Wisconsin: Wisconsin does not possess an attractive wind regime compared to Minnesota, Iowa and other Northern plains states. Many of the better locations in Wisconsin have been or are being developed, and Wisconsin may not possess enough viable wind sites to meet RPS requirements. This is especially a concern under proposed CEJA RPS requirements, which not only increases the RPS requirement, but also requires that a significant amount of renewable generation be supplied by in-state resources.

- Wind is not dispatchable: Wind generation is variable and not predictable. As a result, there are increased system costs associated with the increased regulation needed to accommodate large amounts of wind energy. Wind generation cannot be dispatched on demand in response to system requirements or wholesale pricing considerations.

- Risks with Out-of-State Wind Generation: Purchasing wind generation from projects located in higher wind regimes can be an attractive way to meet RPS requirements. However, a contracted price is paid to the independent power producer, and the buyer of the renewable energy then must sell that power into the MISO market at the point that the wind energy is injected into the transmission system. In areas where an abundance of wind energy is being generated and sold into the MISO market it is not unusual for market prices at the point of injection to be depressed, and lower than the pricing in Wisconsin Electric's service territory. When this happens, the cost of the pricing differential can offset the favorable pricing from the purchase of out-of-state wind resources. Moreover, LMP pricing may change with local changes in generation and system demand.

- Transmission System Additions Needed to Bring Out-Of-State Wind Generation to Wisconsin: MISO and other RTOs are currently struggling with how to get wind generation needed to meet various states RPS requirements delivered from Midwest plains states to Eastern states. A wide variety of high-voltage transmission overbuild plans are being analyzed. Concurrently, there are discussions but no agreement on

who will pay for the high costs of constructing the necessary new transmission facilities.

These disadvantages aside, wind generation will likely remain a major source of future renewable generation added to meet the RPS requirement. Wisconsin Electric, however, desires to build a diverse portfolio of renewable energy resources so as not to rely too heavily on wind generation.

Hydro Generation:
Most of the hydro generation in Wisconsin Electric's renewable portfolio comes from owned facilities built prior to the passage of the RPS. However, the Company continues to add hydro generation to its renewable energy portfolio in the form of small power purchases from existing customers. When available, these small wholesale contracts are an economically competitive source of renewable energy. Unfortunately, these opportunities are limited, and are not expected to significantly contribute to meeting the Company's RPS needs. The potential to construct new hydro generation is limited since there are few desirable locations to construct these facilities.

Solar Generation:
Wisconsin Electric is actively incorporating solar energy into its renewable energy portfolio. Customer-located small capacity solar generation is supported by Wisconsin Electric through its solar Buy-Back Program. The Buy-Back Program was approved by the PSCW in late 2005, and currently accounts for about 1,200 MWh per year of solar energy purchases. The Company continues to investigate practical ways to add solar energy to its renewable energy portfolio.

While the Company seeks to promote the development of solar generation, the cost of solar generation currently limits large scale development of this resource as a means of meeting the RPS.

Fuel Cells:
At present Wisconsin Electric believes that fuel cell technology is neither technically nor economically feasible as a source of renewable energy to meet the RPS. The Company continues to assess the viability of this resource.

Biomass:
Biomass resources include generation from landfill gas, municipal and agricultural waste and energy crops and wood waste. At present biomass generation accounts for about 20% of Wisconsin Electric's renewable energy portfolio. All of the biomass generation in the Company's portfolio is purchased. The primary sources of this biomass energy within the current portfolio are from landfill gas generation and agricultural waste generation. Both sources of biomass energy are cost effective, but are only available in very limited quantities. Accordingly, Wisconsin Electric continues to pursue adding these resources to the renewables portfolio, but cannot rely on these sources to supply the amount of renewable energy needed to satisfy RPS requirements. Lack of availability of these smaller projects has

led Wisconsin Electric to pursue other opportunities to increase the amount of biomass generation in its portfolio, including this Project.

As with out-of-state wind, constructing a biomass generation facility in a state other than Wisconsin may entail additional risk. The proposed CEJA, currently pending before the Wisconsin Legislature, establishes requirements for in-state generation of renewable power. As a result, construction of a biomass facility outside the State of Wisconsin, in Minnesota, Michigan, Iowa or Illinois, runs the risk that some or all of that generation may be determined in the future to not qualify for purposes of satisfying the Wisconsin RPS requirements.

1.3.1.2 No-Build Option

The Company does not believe it could meet the current RPS requirements through any means other than constructing new renewable energy developments and/or entering into PPAs. Therefore, a no-build option is not a preferred alternative to development of the Project.

1.3.1.3 Compliance with the Energy Priorities Law, Wis. Stats. §§ 1.12 and 196.025(1)

Wis. Stat. § 196.025 states "To the extent cost-effective technically feasible and environmentally sound, the Commission shall implement the priorities under § 1.12 (4) in making all energy-related decisions." Wis. Stat. § 1.12 (4) establishes the following priorities:

> (4) PRIORITIES. In meeting energy demands, the policy of the state is that, to the extent cost-effective and technically feasible, options be considered based on the following priorities, in the order listed:
>
> (a) Energy conservation and efficiency.
> (b) Noncombustible renewable resources.
> (c) Combustible renewable energy resources.
> (d) Nonrenewable combustible energy resources in the order listed:
>
> 1. Natural gas.
> 2. Oil or coal with sulfur content of less than 1 percent.
> 3. All other carbon-based fuels.

The purpose of this project is to construct and place in operation a biomass-fueled co-generation facility which constitutes "combustible renewable resources," the third option listed in the priorities list, in order to comply with Wisconsin's RPS. The two higher ranked options in the priorities list are "energy conservation and efficiency" and "Noncombustible renewable resources." Regarding conservation and efficiency, the application of Wis. Stat. § 1.12 (4) and § 196.025 to investor-owned electric public utilities was modified by Act 141 as follows:

> In a proceeding in which an investor-owned electric public utility is a party, the commission shall not order or otherwise impose energy conservation or efficiency requirements on the investor-owned electric public utility if the commission has fulfilled all of its duties under § 196.374 and the investor-owned electric public utility has satisfied the requirements of § 196.374 for the year prior to the commencement of the proceeding, as specified in § 196.374 (8).

Wis. Stat. § 196.025 (1) (b). As explained below in Section 1.3.1.4, Wisconsin Electric has complied with the requirements of § 196.374.

With regard to the second priority, "non-combustible renewable resources," the company considers wind energy to be the closest competitor to the Project based on a comparison of production and cost. Other non-combustible renewables, as discussed in Section 1.3.1.1 are either not cost effective or technically feasible. Due to the additional benefits of biomass that are addressed in Section 1.3.1, including the diversity that woody biomass adds to the Company's renewable portfolio, its ability to be dispatched, its high efficiency as a co-generation facility, as well as the other features identified in this application, the Rothschild project is cost-effective, technically feasible and environmentally sound.

Consequently, the proposed Rothschild co-generation project satisfies the requirements of the Energy Priorities Law.

1.3.1.4 Compliance under Wis. Stat. § 196.374 for energy efficiency

Wis. Stat. § 196.374 requires energy utilities to spend 1.2% of their annual operating revenues to fund energy efficiency and renewable resource programs. Under the law, energy utilities may request funding to implement voluntary programs that are in addition to the 1.2% required. Wis. Stat. § 196.374 (8) provides that an energy utility that spends the full amount required in any year is considered to have satisfied its requirements under this section. Wisconsin Electric has satisfied this requirement every year since the statute was enacted.

Electric Programs:
Wisconsin Electric is delivering a portfolio of ten programs from 2009 through 2011 using voluntary spending, as defined under Wisconsin Act 141; Docket No. 5-UR-103 was approved by the PSCW on October 9, 2008. Although the Company has not been directed to meet any new explicit savings goals, Wisconsin Electric estimates that it will capture about 79 MW and 88,000 MWh in net conservation savings between 2009 and 2011 by implementing the programs described in the Semi-Annual Report.

Natural Gas Programs:
The Company's natural gas efficiency plan is composed of four programs serving hard-to-reach natural gas customers in the Company's service territory. All of these programs were

developed in late 2005 and have been implemented. The 2010-2011 programs have been modified to comply with Chapter PSC 137 of the Wisconsin Administrative Code, and specifically to coordinate with the statewide energy efficiency programs. The total natural gas programs savings goal is 1,820,000 therms per year.

The primary objectives guiding the Company's plan are to maintain and expand the positive influences of the programs and to minimize negative impacts on customers, Focus on Energy and the energy efficiency marketplace.

In its Order dated November 19, 2009 (05-UR-103), the Commission approved Wisconsin Electric's two new pilot natural gas voluntary utility energy efficiency programs for 2010 and 2011 (PSC Ref. # 123850).

Wisconsin Electric's continuing success and commitment to energy conservation also serves to support the objectives of the Governor's Task Force on Global Warming to reduce electric load in Wisconsin two percent by 2015. Based on emissions factors published by the U.S. DOE, energy efficiency measures installed through these programs will avoid over 72,000 tons of CO_2 emissions.

1.3.2 Site Selection Process

The primary consideration for siting a biomass power plant is the availability of a fuel supply. The next criteria used for site selection was the Company's preference to locate the unit at a brownfield or existing industrial site. The Company was also looking for a partner with wood procurement experience. A natural choice is a paper mill with an ongoing pulping operation. These paper mills have wood procurement expertise, are existing industrial sites, and have the added benefit of potentially needing steam. This would allow for co-generation or combined heat and power configuration which is substantially more energy efficient than a stand alone biomass fuel electric generating unit.

To solicit potential partners Wisconsin Electric first approached the Wisconsin Paper Council ("WPC"). In November, 2008 WPC sent an e-mail to all members describing the plan and indicating that interested mills should contact Wisconsin Electric. The Domtar mill in Rothschild, Wisconsin contacted the Company as a result of the WPC e-mail, along with two other Wisconsin paper mills. The mills were provided the Company's selection criteria and requirements, as follows:

a) Located in Wisconsin
b) Operating pulp mill
c) Viable and sustainable fuel source
d) The facility needed to be able to survive a change in mill ownership or closure/abandonment

Only the Rothschild mill had an ongoing pulping operation. Since the other two mills did not have a pulping operation they were not considered for further evaluation. After investigating the feasibility of the Project, Wisconsin Electric notified Domtar that the Rothschild site was

its first choice for the development of the Project. In May, 2009 Wisconsin Electric and Domtar entered into a development agreement to explore this opportunity.

Wisconsin Electric was also contacted by independent power producers ("IPP")s that were developing biomass projects in the region. At that time, those IPPs were looking for an equity partner. The Company informed them it was not interested in contributing equity but would possibly be interested in acquiring developed sites and would be open to receiving a proposal for a PPA. No such proposals were forthcoming at that time.

Wisconsin Electric also considered locating the Project at a location on the northern section of Domtar's mill property, but ultimately rejected that potential site due to its limited size and negative impact on mill operations.

1.4 COST

1.4.1 Capital Cost

In May, 2009, the Company issued a RFP for design engineering services to develop a preliminary design and cost estimate for the Domtar Rothschild site. Key requirements of the RFP were significant design experience with wood fueled power plants and wood handling systems in northern climates, familiarity with interfacing power projects in operating pulp and paper mills, and a core engineering presence in Wisconsin, to facilitate communications. In June, 2009, the Company selected Pöyry as the design engineer. Pöyry is a multinational engineering firm, with a large design office in Appleton, and met all the experience requirements of the RFP.

Pöyry developed general arrangement drawings, process flow diagrams, and piping and instrument diagrams, in order to estimate material quantities for the project. Pöyry also solicited budgetary cost estimates for approximately 85% of the engineered equipment required for the plant. Estimates for the remaining equipment were based on recent Pöyry project experience. In addition, the Company issued RFPs for the CFB boiler and the steam turbine-generator, and has issued limited notice to proceed for those major procurements.

The Company also solicited bids through an RFP for construction services, in part to provide a detailed construction cost estimate as part of the overall estimating process. The Boldt Company was selected to construct the facility, primarily based on its recent experience erecting several circulating fluid bed boilers, working in a northern climate, and its familiarity working with paper companies in northern Wisconsin. Boldt Company provided the labor estimate for the Project, based on the quantities developed by Pöyry.

The overall project cost estimate is based on the detailed estimate prepared by Pöyry with support from Boldt.

Wisconsin Electric estimates the capital cost of the Project to be $ 290.1 million including AFUDC. The estimate of costs by major plant account is shown below.

Table 1.4-1 Project Cost

Capital	Plant Account	(in millions)
Structures and Improvements	231100	$ 45.7
Boiler Plant Equipment	231200	127.3
Turbo-generator Units	231400	41.5
Accessory Electric Equipment	231500	20.2
Miscellaneous Power Plant Equipment	231600	0.3
Allowance		20.0
Sub-total w/o AFUDC		$ 255.0
AFUDC		33.6
Sub-total Capital		$ 288.6
Expense		
CA Development Costs	231200	1.5
Total Gross Project Cost		$ 290.1

1. AFUDC is based on 100% of CWIP.
2. The cost estimates are expressed in year-of-occurrence dollars.
3. The cost of the project will be met from internal sources and/or from the issuance and sale of securities.
4. The project cost estimate assumes the installation of a Selective Non Catalytic Reduction system to control NOx emissions, and a fabric filter baghouse for control of particulate matter.

The transmission provider costs for the interconnection to their system are not included in the above project cost estimate. We anticipate these costs will range from $1.5 million to $9 million depending on the interconnection option chosen, based on preliminary estimates from the transmission providers. Connection via the ATC 115 KV line located approximately ½ mile west of the mill is estimated at $9 million while connection via the WPS 46 KV system which currently feeds the mill is estimated at $1.5 million. The ATC study is in the Facilities Study phase, which will result in a detailed cost estimate. The WPS study is in the Engineering phase, and will include a system stability study and a detailed engineering cost estimate.

1.4.2 Fuel Cost

The cost of green woody biomass at initial operation of the facility is based on several studies specific to the Project as well as industry information. The sources of cost information include The Wood Biomass Market Report[3] the Steigerwaldt Report[4] and the RMT Biomass

[3] Appendix O, RISI, Inc., Wood Biomass Market Report, Feb., 2010, Vol. 3, No. 2.

[4] Appendix O, Forest Biomass Resource Analysis, A Review of the Forest Biomass Resource in Northern Wisconsin and Michigan's Upper Peninsula, January 2009.

Survey Report.[5] Further discussion on this topic can be found in Appendix C, EGEAS Inputs and Results.

1.4.3 Cost Allocation

The proposed methodology to be used in allocating costs between electric and steam is fundamentally the same as the current methodology in use at Wisconsin Electric's Valley Power Plant. Valley Power Plant was built because there was a need for electric generation in the downtown Milwaukee area and process steam capabilities were added because the electric generation facility was near the existing steam system. It was an opportunity not a necessity. The Project is being proposed because there is a need for renewable electric generation. Since the site will be an existing operating paper mill, process steam capabilities are being added, again, because the opportunity presents itself. Valley can independently produce (or dispatch) electric generation and process steam, an attribute necessary to allow it to respond to electric system requirements independent of the process steam demand. These same requirements apply to the Project.

Capital Cost Allocation
Capital costs are allocated between electric generation and steam production based on an incremental cost methodology. The costs allocated to electric generation are the capital costs required to build an electric only power plant. The costs allocated to steam production are the incremental capital costs associated with equipment installed to provide process steam functionality.

Fuel Cost Allocation
Fuel costs are allocated to electric generation and steam production based on a utilized energy allocation. For a given month the total biomass boiler heat input is calculated based on the amount of fuels consumed by the boiler and the energy content of the fuel. The energy delivered in the process steam is calculated by measuring the amount of process steam supplied and multiplying by the utilized energy of the steam. The energy allocated to electric generation is the difference between the total heat input to the boiler and the energy delivered in the steam. These values are converted to percentages and used to allocated fuel costs between steam production and electric generation.

Operating and Maintenance Cost Allocation
Operating and maintenance cost associated with equipment installed solely for the production of electric generation is allocated 100% to electric generation (i.e. the generator). Operating and maintenance cost associated with equipment installed solely for process steam production is allocated 100% to steam production (i.e. the turbine by-pass). The cost for equipment utilized for the production of steam and electric generation is split into three categorizes. Cost associated with fuel handling, conveying, storage and processing are allocated based on the fuel cost allocation. Costs associated with make-up water systems are based on the proportion of water used by electric generation and steam production. All other O&M costs are allocated based on the capital cost allocation.

[5] Appendix O, RMT, Inc., Biomass Survey Report, Domtar Paper Company LLC, June, 2009.

Appendix A, Cost Allocation, contains additional detailed information on the cost allocation methodology. Specifically, the Appendix contains;

- Typical Cost Flow Table
- Cost Allocation White paper by HDR

1.4.4 Commercial Agreements

There are five agreements which will define the commercial arrangement between Wisconsin Electric and Domtar. An executed Letter of Intent containing the terms of the agreements is contained in Appendix B, Wisconsin Electric/Domtar Commercial Agreements. Briefly, the agreements are as follows:

Master Agreement – covers the rights and responsibilities of the parties for the period from the start of construction through commercial operations.

Ground and Infrastructure Lease – defines the boundaries of the leased premises, the systems and equipment to be used by Wisconsin Electric, and the rent to be paid to Domtar.

Steam Supply Agreement – defines the volumes and cost of steam to be supplied to Domtar.

Fuel Supply Agreement – defines the process by which Domtar will act as Wisconsin Electric's agent in the procurement of fuel, the quantity of fuel to be acquired, and how the cost of fuel will be determined.

Operating and Maintenance Agreement – governs the actions of the operator, either Domtar or Wisconsin Electric, including obligations and fee structure.

1.4.5 Other Agreements

The Project will be a Wisconsin Electric-owned rate-base asset. Therefore, Wis. Stat. § 196.52(9)(a)3(b) (leased generation) does not apply.

Approval of the interconnection agreements between Wisconsin Electric, MISO and ATC will be required if the project is connected through ATC. It is anticipated that the ATC will apply for these approvals as the interconnection agreements are executed. If the Project is connected through the WPS system then Wisconsin Electric will execute the required distribution interconnection agreements with WPS.

Wisconsin Electric costs associated with the interconnection agreements and costs of associated studies are included in the cost estimates for the Project.

1.4.6 Comparative costs of alternatives

This section will present information on the cost of conventional and renewable generation options used in the EGEAS modeling for the project.

Renewable Generation Alternatives:

The Project**:**
The Rothschild biomass project is modeled as a 50 MW plant with 44 MW of operating capacity. The first 15 MW of capacity are "must run" meaning that that portion of the plant will run continuously, since the plant must provide steam to the Domtar paper mill. The remaining capacity of the plant is dispatched when it is the most economical generation available to meet load. The EGEAS modeling for the project only considers the production cost of generation in its dispatch calculations. However, in practice Wisconsin Electric would also consider how the cost of generation from the facility would compare to the cost of purchasing green tags and/or renewable energy in deciding to dispatch the plant. This could cause the dispatch of the plant to be higher than the dispatch level indicated in the economic modeling.

Production Tax Credits or Investment Tax Credits are available for this project. Production Tax Credits were applied for purposes of EGEAS modeling. Production Tax Credits were selected over Investment Tax Credits due to the impacts of the normalization rules that apply to regulated utilities. Normalization decreases the benefits of Investment Tax Credits. Production Tax Credit calculations for the Rothschild project are presented in Appendix C, Table 1.

Specific costs used in the modeling of the Rothschild Biomass facility are presented in Appendix C, Table 2 and Table 2-A and include: fuel and O&M assumptions, capacity and heat rate assumptions, outage assumptions and capital assumptions. The plant life is expected to be 40 years.

Biomass Generation:
The generic biomass units in the EGEAS analysis are modeled using the costs and performance characteristics of the Project. They are sized at 50 MW and limited to 400 MW of total generation. . This upper bound is a rough approximation of the maximum amount of economically viable and technically feasible biomass generation that may be available to Wisconsin Electric throughout the region, including from out-of-state sources. While the cost of generic biomass generation is based on the cost of the Project, the generic alternative is intended to be representative of all types of biomass generation whether acquired through power purchases or construction of new facilities.

Wind Generation:
There are two types of wind generation modeled for this study. Both types use the costs of the Glacier Hills Wind Park to represent future wind projects. To compare the cost of the Project against a competing wind project, a wind project with the same energy output as the Rothschild project and with the same in-service date was assumed.

The second type of wind generation used in the economic analysis was generic wind. The generic wind units are sized at 200 MW and can be selected into service at any time during the study period. A limit of 1,000 MW of wind is made available in the modeling to represent

Wisconsin Electric's estimate of the amount of economically available wind in Wisconsin and from out-of-state sources.

Wind is non-dispatchable. An hourly load profile with a 27.5% capacity factor is used to model wind. The capacity factor represents a blend of Wisconsin and out-of-state wind resource.

The Production Tax Credit calculations for wind projects can be found in Appendix C Table 3, and the costs used to model generic wind units are presented in Table 4.

Solar Generation:
The construction cost of solar generation is about $7,500 per KW, and solar generation is modeled with a fifteen percent capacity factor. Five MW of solar generation are forced into the model in 2012 and another 7.5MW are forced-in in 2015 in the RPS compliant EGEAS sensitivities. Based on these cost characteristics, solar generation is not cost competitive with other forms of renewable generation and was not added as a planning alternative in the economic modeling.

Hydro Generation:
Wisconsin Electric's hydro generation is included as existing generation in the EGEAS modeling. The energy from purchasing existing hydro facilities does not qualify as renewable energy under Wisconsin's RPS, making it unlikely that Wisconsin Electric would ever pursue a purchase of an existing facility. And, since only very rarely are new sites available for the development of new hydro facilities, hydro generation was not modeled as a planning alternative.

Fuel Cells:
Fuel cell technology is not sufficiently developed to be a viable source of renewable energy.

Conventional Generation Options:
The economic analysis conducted for the Project includes the following types of conventional generation. The cost and performance characteristics of the conventional generation planning alternatives in EGEAS as well as those of the renewable generation planning alternatives are summarized in Appendix C, Table 5.

Advanced Coal:
Advanced coal units are generically modeled as next generation coal-fired technology. They include improved efficiency Super-Critical Coal units or Integrated Gasification Combined Cycle units. Both technologies are assumed to be configured for carbon capture. However, carbon capture technology is not incorporated into the units at the time of construction, but could be added at a later date for an additional cost.

Coal units are modeled as two unit plants with the second unit being placed in-service one year after the first unit is completed. The first unit is modeled with a higher construction cost than the second unit, since it is assumed to include costs that are common to both units. The

units are modeled at 515 MW of capacity each. Due to licensing and lead times advanced coal units are first made available in 2018.

Combined Cycle Units:
Like the advanced coal units, combined cycle units also employ the two unit plant assumption with capacities of 545 MW for each unit. The pricing and performance of these units does not include oil back-up, but does assume a firm non-interruptible natural gas supply. These units are first made available in 2016.

Combustion Turbine Units:
Combustion turbine units are available in 150 MW blocks with up to 750 MW of combustion turbine generation available for construction in any one-year period. They are modeled with a fixed non-interruptible fuel supply, and are first available starting in 2012.

Short-term Purchases:
Short-term purchases are one-year 50 MW power purchase contracts that are modeled based on the cost of combustion turbine generation. The contracts are available from 2010 through 2017 to serve as an alternative to combustion turbines for short-term needs, until other planning alternatives are available.

Units that are modeled as planning alternatives include: generic wind, generic biomass, advanced coal, combined cycle, combustion turbines and short-term purchases. These units are selected based on their economic merit into a least cost generation expansion plan that is created by the EGEAS model. The Project or the 2013-Wind Unit are then forced into the EGEAS model and a new least cost generation expansion plan is calculated by EGEAS. The cost of an expansion plan with the Project can then be compared to one without the Project to determine the system cost impact of adding this facility. The same is done for a competing wind project of the same size and in-service date as the Project in order the see how wind generation compares to the Rothschild proposal. The results of these comparisons are presented in Section 1.2.3.

1.5 DESCRIPTION OF PROPOSED POWER PLANT

The Company is proposing to construct a steam/electric cogeneration facility, to be located on the Domtar property. The facility will be designed to produce 50 MW net electric generation, as well as provide the full process steam requirements of the Domtar paper mill. In normal operating mode, process steam for the mill will be extracted from the turbine generator, slightly reducing net generation capability. A turbine bypass system will be installed to maintain reliable steam supply to the mill in the event of a turbine trip. Two natural gas fired auxiliary boilers will be installed, capable of providing full steam requirements to the mill in the event the biomass boiler is out of service, or full electric capability is required.

As this facility will be supplying process steam to the Rothschild mill as well as generating renewable energy, a highly reliable, mature technology is critical to the success of this project. As such the Company selected the standard and well proven subcritical boiler matched to an auto-extraction steam turbine cycle for this cogeneration application. The

Company evaluated three boiler technologies which have wide application in combusting biomass: stoker, bubbling fluid bed ("BFB"), and circulating fluid bed ("CFB"). Key attributes considered were reliability, environmental performance, installed base of units of similar size, and overall long term cost. Stoker boilers have the highest uncontrolled emissions and poorest efficiency of the three technologies, and the majority of the installed base of units are less than the 500,000 pound per hour steam rate that the project requires. BFB and CFB boilers are more efficient than stoker boilers, and require less costly emissions controls to meet expected environmental requirements. There is a larger installed base of CFB units capable of providing the steam rate that the Project requires, so a CFB has the lowest technology risk. A CFB also provides greater fuel flexibility which, given the fledgling biomass industry and the potential for a wide variety of fuels to emerge, is highly desirable. Ultimately, the Company selected CFB technology for the Project, because it has the best overall environmental performance, provides the greatest fuel flexibility, is a highly reliable and mature technology, and has the highest efficiency of the technologies available.

The CFB boiler is designed to be fueled with 100% woody biomass, with natural gas provided only for start up and flame stabilization purposes. Steam from the boiler will feed an automatic extraction turbine/generator. Process steam for the mill will be extracted from the turbine at 200 psig, and supply a new process steam line connecting the facility to the paper mill. Condensate from the mill process will be returned to the facility for reuse. A closed loop cooling system, utilizing a mechanical draft cooling tower, will be constructed to condense the remaining turbine steam. A demineralizer system will be installed to process raw water for boiler make up. Raw water for both cooling tower make up and demineralizer make up will be provided by the existing mill raw water system. Process waste water from the facility will discharge to the existing mill waste water treatment facility.

New ash systems will be constructed to process boiler ash. Bottom ash will be removed by a mechanical conveyor for beneficial reuse or disposal. Fly ash will be collected by the new fabric filter bag house, and then conveyed to a new storage silo and unloader. Ash will be removed by truck for beneficial reuse.

A new biomass fuel handling system will be constructed. This system will be designed to blend existing mill wood waste streams with purchased biomass.

1.6 EFFECT OF THE PROJECT ON WHOLESALE MARKET COMPETITION

Not required for CA application.

1.7 CONNECTING FACILITIES

The Domtar mill will provide the make up water requirements for the facility from its existing raw water intake structure located on the Wisconsin River. A pipe bridge will be installed to connect the mill with the Project. The pipe bridge will support raw water supply to the Project, condensate return from the mill to the Project, and the process steam line from the Project to the mill. It will also support the conveyor transporting wood room waste to the biomass fuel storage facility.

Process waste water from the Project, including cooling tower blowdown and demineralizer waste streams, will be routed by an underground pipeline to the existing mill wastewater treatment facility. That facility discharges to the Wisconsin River at an existing permitted outfall.

Potable water for the Project will be provided by the Village of Rothschild, from a new connection with the Village water utility. Sanitary sewer service will be by a new sewer connection to the Village sanitary sewer system.

1.8 ELECTRIC TRANSMISSION AND NATURAL GAS INTERCONNECTIONS

Natural gas service to supply the new CFB boiler, as well as the auxiliary boilers, will be provided by the existing WPS gas lateral which currently supplies the Domtar property. A new metering facility will be installed on the property to connect the service. No other modification to the WPS gas distribution system will be required to serve the facility.

Electrical interconnection service will be provided by either:

1.) a new ATC 115 kV switchyard located on the project site. This switchyard will connect through a loop feed to ATC line Z52, located approximately ½ mile west of the site, on the west side of Interstate Highway I-39
2.) a new WPS 46 kV substation located on the project site. This substation will be fed by the existing WPS 46 kV distribution line that currently supplies the Domtar mill substation.

1.9 CO-GENERATION

The facility will be designed to provide the full process steam requirements of the Domtar paper mill. As there are no other large steam hosts in the vicinity, no future expansion of the system beyond the mill property is anticipated.

1.10 EXPECTED LIFE SPAN

The facility will be designed for a 40 year operating and book life.

1.11 PROJECT DRAWINGS AND PHOTO SIMULATIONS

Project Drawings and Photo Simulations of the facility are contained in Appendices D and E respectively. They include:

- Overall site plan, showing all major structures and equipment
- Elevation drawings of the major structures
- Process flow diagrams of both the power block and biomass handling facilities
- One line diagram of the electrical interconnect facilities
- Photographic renderings of the facility shown as planned on the existing Domtar site

1.12 WORKFORCE

During construction, the peak work force (craft and supervision) required will be approximately 400 workers. The average workforce will be 250 workers. The local union building trades workforce will likely need to be supplemented by trades-people from the surrounding region.

There will also be approximately 150 support jobs (loggers, truckers, etc.) supplying the facility with fuel.

The Project to the extent it helps Domtar remain competitive; will also protect the 400 jobs at the mill and the roughly 800 jobs in the community supporting mill operations.

1.13 EXPECTED HOURS OF OPERATION

The facility will be designed to operate as a base load facility, 24 hours per day, 7 days per week. The electric generation from the facility will be dispatched to support electric system requirements, and steam from the facility will be dispatched to match the mill's process steam requirements.

1.14 BIOMASS FUEL

Wisconsin Electric and Domtar have determined that there is an adequate and sustainable supply of fuel for the proposed facility. This Section discusses fuel availability and sustainable harvesting techniques.

The optimal fuel for this project is woody biomass. Such fuel may come from:

- Logging operations where trees are harvested for timber and the tops and branches are available for harvest as biomass.
- Discarded woody material from primary manufacturing facilities such as paper mills, sawmills, or chip mills.
- Leftover woody material from secondary manufacturers such as door, window, cabinet manufacturers
- Municipal wood waste, tree services, and construction companies.

1.14.1 Primary Sources of Biomass Fuel

The primary target source and anchor biomass fuel for this project will be from logging residues generated during forest harvesting. There currently is forest harvest activity on federal, state, county, industrial, private managed forest law (MFL) land and private non-MFL forest land. It is anticipated that 84% of the biomass fuel will come from private non-industrial MFL, private non-industrial non-MFL and county lands. The rest will come from other forest ownerships. The accuracy of these estimates may vary depending on future availability and sourcing agreements.

1.14.1.1 Fuel selection and availability

In 2009, Wisconsin Electric and Domtar separately began detailed planning for fuel supply for the proposed facility. The two parties conducted a total of five studies looking at issues such as fuel availability, siting, appropriate technology and fuel sources. While each of the five studies had a somewhat different scope, every study concluded that the fuel supply is adequate and available to support the operation of the Project. The various elements of these studies are described below.

Wisconsin Electric commissioned three studies which were used to select the appropriate fuel(s) and determine the size of the facility(s) for 50 MW of biomass fuel electric generation. The two purposes of the first study, [6] performed by the Energy Center of Wisconsin, were to review all available biomass in Wisconsin and recommend which type of biomass material was best suited as an "anchor fuel"[7] for the proposed 50 MW electric power plant. The report concluded the most likely anchor fuel would be forest harvest residues. The report further concluded that if 65% of Wisconsin forest harvest residues were collected (a conservative estimate), that fuel would support 174 MW of electric generation. Finally, the report indicated that other fuels would likely be needed to supplement harvest residues for a 50 MW plant.

The second study was performed by ScottMadden.[8] The two purposes of the Scott Madden study were to provide a second opinion on the use of forest harvest residues as the anchor fuel and to recommend the size and number of facilities and their location. This report estimated that 70% of logging residues could be recovered, and that those residues could support 250-320 MW of biomass-fueled electric generation in Wisconsin. Subsequent analysis by ScottMadden concluded that a single 50 MW generating unit is the preferred economic choice rather than two 25 MW units, and the 50 MW unit should be located in Northern Wisconsin.[9]

The third study was performed by Steigerwaldt Land Services.[10] The purpose was to estimate the volume of recoverable harvest residues and to provide information on current and future fuel costs. Steigerwaldt estimated there is about 160 MW of recoverable harvest residues in Wisconsin. The fuel cost estimate contained in the Steigerwaldt study provides insights on current expectations and potential trends.

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[6] Appendix O, Energy Center of Wisconsin, We Energies Wisconsin Biomass Concentration and Availability Scoping, December 2008.

[7] The term anchor fuel is used to describe the primary fuel source for the biomass power plant.

[8] Appendix O, ScottMadden, We Energies Biomass Energy Strategy, Strategy for Siting and Fueling 50 MW of Biomass Generation in Wisconsin, November 20, 2009.

[9] Appendix O, ScottMadden, We Energies Biomass Energy Strategy, Cost Comparison for Biomass Generation Options in Wisconsin, March 25, 2009.

[10] Appendix O, Forest Biomass Resource Analysis, A Review of the Forest Biomass Resource in Northern Wisconsin and Michigan's Upper Peninsula, January 2009.

In early 2009, Domtar commissioned an independent study by RMT, Inc., to survey and evaluate fuel sources and current and future costs.[11] The study looked at suppliers in counties within 75 miles of the mill that were capable of supplying at least 100,000 tons of biomass per year. RMT contacted potential suppliers as part of the market assessment. Study findings were as follows:

- Approximately 2.2 million green tons per year of woody biomass in the form of logging residue are considered to be economically viable for recovery from the forest floor in Wisconsin.
- An estimated 814,000 green tons per year is available and located within 75 miles of the Project. The biomass power development would potentially use approximately 500,000 green tons per year of this supply to meet the fuel needs. An additional 50,000 green tons per year is available from Domtar's biomass waste streams.
- In addition to forestry-related woody biomass, wood waste from wood product manufacturers (window manufacturers, millwork shops), saw mills and related industries represent a significant potential fuel source. These sources would reduce/offset forest woody biomass sourcing needs.
- Woody biomass prices are forecast to be comparable to coal prices into the future.

Domtar commissioned a second comprehensive biomass fuel sourcing study by Renewable Resource Solutions, LLC in November 2009.[12] The report concludes there is sufficient woody biomass within 75 miles to support the proposed facility. The report estimated that at a 25% to 40% recovery rate there is between 467,000 and 748,000 green tons available.

Therefore, each of the reports found that there is sufficient biomass to supply fuel for the Rothschild facility.

1.14.1.2 Forestry Meeting at Domtar

Domtar and Wisconsin Electric held an informational meeting on December 16, 2009 for managers and administrators of public forests within the 75 mile procurement radius around the proposed facility. The purpose of the meeting was to provide an introduction to the project and obtain input from forest managers regarding biomass fuel sourcing. Among the 15-20 people who attended the meeting were forest managers representing county and national forests, the DNR and forestry association representatives. Also present were several staff members from Domtar, Domtar's forestry consultant (Renewable Resource Solutions) and Wisconsin Electric.

Domtar provided an overview of the proposed biomass power plant and the volume of biomass needed to supply the facility. Attendees discussed the volume and characteristics of appropriate biomass including size, species, and type of eligible woody materials and

[11] Appendix O, RMT, Inc., Biomass Survey Report, Domtar Paper Company LLC, June, 2009.

[12] Appendix O, Renewable Resource Solutions, LLC, Comprehensive Resource Analysis, February 2010.

delivery, measurement and pricing issues. There was additional discussion about the use of biomass harvesting guidelines, preference for Suitable Forestry Initiative and Forest Stewardship Council certified wood, Domtar's status as an approved facility under the Biomass Crop Assistance Program, potential use of other sources of biomass such as agricultural residue, biomass economics, physical barriers that would limit biomass extraction, and potential investment and/or grants for enhancing biomass harvesting techniques.

Over half of the participants provided information though a follow-up informational survey. The survey collected input on whether the individual forests currently had a policy for selling woody biomass, potential obstacles and barriers to selling biomass, opportunities for additional activities that are not currently being pursued but could be if there was a woody biomass market, and whether biomass tops could be stored at properties to lower moisture content before they are chipped and any difficulties that this might create. The survey also asked for any estimates the forest managers could make regarding the amount of biomass that could be harvested annually from their properties. These discussions supported the conclusion that there is an adequate supply of fuel for the proposed facility.

Wisconsin Electric and Domtar will continue to hold meetings with loggers, suppliers and other entities having a vested interest in the procurement of fuel for the Rothschild facility during development of the project.

1.14.2 Domtar Mill Derived Fuels

Domtar's wood processing and pulp operations will generate 50,000 green tons per year as a supplement to the harvest-derived fuels. Wood waste generated in Domtar's woodroom from log debarking and chipping is one fuel source. Another source is "pulp screenings," which come from the pulp mill in the form of wood knots and other uncooked pieces of wood that are screened out of the pulping process. Pulp screenings are not suitable for paper making. Another potential minor fuel source is residue from Domtar's waste water treatment facility.

1.14.3 Other Potential and Opportunity Fuels

Domtar and Wisconsin Electric do not intend to use whole trees for the power facility. However, there certainly may be times and opportunities to utilize whole trees for biomass. Opportunities to use whole trees might arise if invasive species attacking a certain tree species (e.g. Emerald Ash Beetles) require removal of trees to prevent or slow the spread and right of way clearing for power lines, roads, or similar activities.

Additional potential sources of woody biomass for fuel sourcing from forests include:

- Releasing regeneration by removing competing undesirable tree species.
- Performing timber stand improvement by thinning out stands of high value species at diameters that are typically unmerchantable.
- Salvaging trees after adverse events (tornado, forest fire, etc.) that make the wood unmerchantable for other higher-value use.
- Site preparation for planting or natural regeneration.

- Tree removal for fire hazard reduction.
- Clearing of invasive species to reclaim land.
- Wildlife habitat treatment, such as opening creation, tag alder shearing, conversion of brush/forest to prairie or marsh, etc..
- Diseased and/or insect killed tree removal (as controlled by state regulations).
- Municipal brush dumps; periodic municipal chipping.

Domtar and Wisconsin Electric may also be able to make use of opportunity fuels consisting of clean solid wood waste. Examples of wood waste include the following:

- Sawmills/Wood manufacturers: Sawdust, shavings, chips, bark
- Veneer mills: Bark, cores
- Secondary forest industry residue: Shavings, sawdust, ends, and miscellaneous pieces
- Discarded wood packaging: Pallets/crating
- Construction and demolition activities

Additional opportunity fuel sources may develop over time. These may consist of woody biomass plantations, energy crops and agricultural residues. In the near term, the Company does not anticipate these sources will be available as additional opportunity fuels. However, Wisconsin Electric specifically selected the boiler technology and plant design to allow combustion of a wide range of fuels if and when they become available.

1.14.4 Harvesting standards and guidelines

Domtar and Wisconsin Electric commit to harvesting woody biomass fuel in a sustainable manner. As long as sustainable forestry practices are followed, forests remain productive. There are a variety of accepted forestry certification systems, including Forest Stewardship Council, Sustainable Forestry Initiative, Managed Forest Law land and Master Logger. Such certification systems hold producers and consuming facilities to acceptable harvesting and procurement practices and are audited by third parties.

The Wisconsin Woody Biomass Harvesting Guidelines are being implemented on state, county, and MFL lands. These guidelines delineate environmental considerations and ensure the proper amount of forest residue is left on the forest floor to provide nutrients for the soil, to protect soil physical properties, to maintain water quality, and to protect forest biodiversity. The Guidelines describe how coarse woody debris, fine woody debris, forest litter, stumps, and root systems should be handled when harvesting woody biomass, and reinforce the importance of green tree retention as part of biomass harvest units. They also include specific recommendations for sensitive situations such as: (1) presence of species of greatest conservation need and sensitive ecosystems; (2) complete salvage operations following severe disturbances such as crown fires; (3) shallow soils within 20 inches of bedrock; (4) dry nutrient-poor sandy soils; and (5) wetland soils with at least 16 inches of organic material that are nutrient-poor. These Guidelines will likely evolve over time.

Best Management Practices (“BMPs”) for Water Quality have been developed to help ensure water quality is not compromised during the forest harvesting activities. BMPs cover topics

such as maintaining safe distances from streams, rivers and lakes, safe ways to cross water ways if necessary, how to install culverts and how to minimize changes in water runoff and erosion. BMPs continue to be taught at logger training classes around the state. The Wisconsin DNR conducts periodic audits to see how well BMPs are being applied in the forests.

Wisconsin Forest Management Guidelines ("FMGs") outline practical, site specific considerations that land managers need to take into account when planning forestry operations. The FMGs cover items such as sustainable forest management principles that can serve recreation, wildlife habitat improvement, endangered species protection, water quality and forest products.

Wisconsin has been successful in managing its forests in a sustainable manner. One measure of this success is that Wisconsin now has more forest land than at any other time since 1936, when forest land inventories began. On average, net annual wood growth exceeds harvest and mortality. Another measure of success is that the 2006 BMPs for Water Quality Report published by the Wisconsin DNR shows that federal timber sales BMPs were correctly applied 95% of the time. Likewise, for federal timber sales, application of Riparian Management Zone (RMZ) BMPs increased significantly from 1997, when it was applied correctly 79% of the time to 2006 when the percentage jumped to 94%. On industrial timber sales these same BMPs were applied correctly 94% of the time (2006). The application of RMZ BMPs for industrial timber sales improved from 81% correct in 1997 to 95% correct in 2006. The net effect of these improvements has been more responsible stewardship of the state's forests.

1.14.4.1 Domtar's commitment to sustainable harvest practices

Domtar will act as Wisconsin Electric's procurement agent for biomass fuel. Domtar strongly supports sustainable practices. Domtar has developed and implemented the following policies and statements of commitment:

- Environmental Policy[13]
- Forest Policy[14]
- Fiber Use and Sourcing Policy[15]
- Statement of Sustainable Growth[16]

The Domtar-Rothschild mill is both Forest Stewardship Council and Sustainable Forestry Initiative Chain of Custody third party certified.

[13] Appendix P, Domtar Environmental Policy – John D. Williams, President and CEO.

[14] Appendix P, Domtar Forest Policy - John D. Williams, President and CEO.

[15] Appendix P, Domtar Fiber Use and Sourcing Policy – John D. Williams, President and CEO

[16] Appendix P, Domtar Statement of Sustainable Growth – John D. Williams, President and CEO

All contracts for harvest-derived woody biomass will include a requirement that suppliers follow the Wisconsin Woody Biomass Harvesting Guidelines on a continuous basis, including any modifications that may be made to the Guidelines, as well as BMPs, FMGs, and other applicable guidelines.

Domtar will work with federal, state and county government offices to monitor biomass fuel harvesting. The Wisconsin Woody Biomass Harvesting Guidelines provide that the DNR will monitor their implementation for both certification efforts and for evaluating the effectiveness of the Guidelines. All harvest-derived fuels procured for the Rothschild facility that come from state and county forest lands and from all private forest lands enrolled in the Managed Forest Lands program will be covered under this monitoring plan. Wisconsin Electric and Domtar expect that this existing monitoring program will cover approximately 65-70% of the harvest-derived fuels procured for the Rothschild facility, depending on whether tribal forests are included.

In addition, federal forest lands are also managed and monitored according to an equally stringent set of biomass harvesting requirements. Harvest residue from federal forest land is expected to provide approximately 5% of the total harvest-derived fuels procured for the Rothschild facility.

Therefore, 70-75% of the harvest-derived fuel is already subject to harvest monitoring as part of the implementing agencies' monitoring programs and procedures. Wisconsin Electric and Domtar will develop a program to cover land not currently subject to the guidelines so that 100% of the harvest-derived fuels procured for the Project will be subject to the Wisconsin Woody Biomass Harvesting Guidelines or to comparable federal requirements.

The Biomass Fuel Supply Agreement term sheet is provided in Appendix B, Wisconsin Electric/Domtar Commercial Agreements

Domtar has many pulp and paper mills throughout the U.S. and Canada with each participating in a number of initiatives and practices to support and promote sustainable forestry. In Wisconsin, two Domtar mills participate on the State Implementation Committee for the Wisconsin Sustainable Forestry Initiative Training Standards. These standards establish the minimum training required in order for loggers, truckers or others to be considered a qualified professional. Domtar pays annual dues to the Wisconsin Sustainable Forestry Initiative Committee based on the volume of pulpwood consumed at the mill. These annual dues contribute to grants made to organizations that help promote sustainable forests through logger training, land certification programs and education for schoolchildren.

1.14.5 Current and anticipated harvest practices

1.14.5.1 Logging residue harvest process

Due to common equipment needed to do both types of harvesting, loggers will maximize efficiencies by retrieving pulpwood and logging residue concurrently while on site and avoid having to haul equipment back later, while limiting adverse ecosystem impacts.

Forest harvesting typically does not occur during times of wet weather or soft soil conditions. Working during these conditions could result in unacceptable rutting of the soil potentially affecting water drainage and soil erosion. Heavy rain can stop logging operations for several days at a time. During the spring "break-up" logging operations shut down due to road weight limit restrictions as well as wet conditions in the woods. Harvesting also normally does not occur when temperatures are well below zero. Severe cold temperatures increase the risk of ruptured hydraulic hoses (which could result in oil leakage onto the ground) and is generally hard on equipment parts.

There are various end users of the trees harvested such as veneer logs (the most valuable), saw logs, boltwood[17], and pulpwood (least valuable). It is important to note that the end use of a tree can be influenced by market demands. For example, typically pulpwood is considered 4" diameter and up, however, if the demand for pulpwood goes down mills may specify pulpwood of 6" and up. The change in the mill specification does not change which trees are harvested, resulting in higher quality wood to the pulp mill, and more logging residue available for fuel.

1.14.5.2 Domtar's current pulpwood practices

Domtar's Rothschild mill currently has approximately 100 pulpwood suppliers. However, it receives approximately 65% of its pulp wood from only 12 suppliers that have established that they can consistently fulfill contract expectations. The remaining suppliers bring in the other 35% of demand. Wood is received from far out as 120 miles, well beyond the expected biomass procurement radius of 75 miles.

Domtar's Rothschild facility has a good reputation in the logging community as a result of fair and honest relationships. Domtar-Rothschild does not buy standing timber or land to harvest; rather it buys wood on the open market. Domtar monitors supplier compliance with contract conditions, including sustainable forestry practices, through routine audits including site visits. Non-compliance issues are addressed using an escalating process which starts with verbal directions to correct the issue culminating with contract cancellation and discontinuing further supply orders.

1.14.6 Transportation

The project will require approximately 500,000 green tons of biomass fuel annually. Domtar's wood processing and pulp operations currently generate 50,000 green tons per year which will supplement the annual biomass fuel requirement. The 500,000 green tons will be transported to Rothschild by truck. This equates to 18,000 trucks per year at 28 green tons of biomass per truck, effectively doubling the current truck traffic. The majority of truck deliveries will come from the Highway 29 off ramps, then proceed approximately ½ mile south on Business 51 towards the plant. Biomass fuel trucks will enter the plant at the south

[17] Boltwood – smaller diameter and/or shorter length sawlog grade hardwoods, usually manufactured into items such as furniture blanks, dowels, etc.

entrance. Currently, approximately 2,600 trucks per year deliver biomass through the north entrance for Domtar's existing biomass fired boiler. Therefore, the net annual increase in fuel truck traffic to the site will be approximately 15,400 trucks of biomass. Please see Section 2.37 for further discussion of traffic increases and mitigation measures.

1.14.7 Storage and handling

Biomass fuel will be transported to the facility in chipped form by covered trucks, supplemented by existing mill wood processing and pulping wood waste. The biomass receiving facility will include weigh scales, two hydraulic extended arm truck dumpers, and a reclaim hopper for self-unloading trucks. Each truck dumper will be capable of a cycle time of 5 trucks per hour, unloading approximately 150 tons per hour of biomass each. Normal truck deliveries (60 to 90 trucks per day) will be scheduled for Monday through Friday, between 6 am and 6 pm. A separate reclaim system will be constructed to blend waste water treatment residue into the fuel system (approximately 100 tons per day).

The delivered fuel will be conveyed to a hogging/screening system, where it is sized for final use in the boiler. The fuel is then conveyed to an enclosed storage facility (10 days capacity), where it is stacked out using a tripper conveyor. This will allow for simultaneous stack out and reclaim operations. Woodroom waste from the mill will be conveyed to the hogging/screening building, where it will be blended in with the main fuel on the same transfer to storage conveyor.

A portal reclaimer will reclaim the stored fuel for transport by a boiler feed conveyor to the boiler fuel silos. The reclaim process will be controlled by fuel level in the boiler silos. A bypass chute on the fuel transfer to storage conveyor will be installed to allow the discharge of the hogging/screening system to be conveyed directly to the boiler silos. Dust collection will be installed at transfer points in the system as needed to manage fugitive dust. All conveyors will be enclosed.

To handle the mill's wood waste, a new conveying system will be installed to transfer material to the new boiler fuel handling system. This will consist of a new transfer conveying line and cyclone separator for the pulp screen rejects, fed by the existing pulp screen rejects blower, to transfer this material to the woodroom. The cyclone will discharge the rejects onto the existing chip screen conveyor, where it will mix with wood room bark. A new woodroom biomass fuel conveying system will be installed to transport the combined wastes to the new biomass hogging/screening building in the power facility fuel handling area. At that point, the woodroom fuel will be blended on the purchased fuel conveyor for transport to the biomass fuel storage building.

1.15 TECHNICAL PARAMETERS

1.15.1 Expected operating characteristics for the project

The heat rate of the Project is a function of the process load. The following table shows heat rate and overall plant efficiency as a function of process steam demand:

Table 1.15-1 Thermal performance

Domtar Biomass Co-generation Facility Thermal Performance								
Boiler Output *	100% MCR	100% MCR	100% MCR	80% MCR	80% MCR	80% MCR ****	60% MCR	60% MCR ****
DOMTAR steam flow * (#/hr)	0	200,000	300,000	0	200,000	280,000	0	200,000
Fuel Demand * * MBTU/hr	682	781	785	549	630	634	416	479
Fuel Demand * * tons/hr	75	86	87	61	70	70	46	53
Boiler Efficiency	78.2%	78.2%	78.2%	77.6%	77.6%	77.6%	77.0%	77.0%
Steam flow to turbine (#/hr)	483,000	550,000	550,000	385,000	440,000	440,000	290,000	330,000
Turbine output (Gross MW)	57	51	43	45	36	28	33	21
Unit output (Net MW)	50	44	37	38	30	21	27	15
Turbine Heat Rate	9,321	11,855	14,118	9,497	13,489	17,716	9,841	17,396
Net Electric Heat rate * * *	13,361	10,944	9,343	14,314	11,191	8,778	15,669	11,728
Overall Plant Cogeneration Efficiency * * *	25.0%	48.9%	60.0%	23.8%	52.7%	66.1%	21.8%	59.1%
NOTES:								
* % of Maximum Continuous Rating -- Boiler output in #/hr is based on 1550 psi and 950 F temp.								
* DOMTAR steam flow in #/hr is based on 180 psi and 450 F temp extraction from turbine.								
** Fuel demand based on the estimated fuel moisture content of 39%								
*** Efficiency based on steam utilization by DOMTAR								
**** Minimum condenser flow cases								

The Project will be designed for a high level of reliability, to insure reliable steam supply to the Domtar mill. The expected annual equivalent availability of the biomass boiler is 94%, and the Project includes natural gas fueled auxiliary boilers to provide process steam when the biomass boiler is out of service.

1.16 WATER BALANCES

Table 1.16-1 shows a facility water balance for various operating scenarios and mill steam demands.

Table 1.16-1 Water Balance

Domtar Biomass Co-generation Facility Water Balance									
	Summer (90 F)			**Average (44 F)**			**Winter (0 F)**		
Boiler Output *	100% MCR	100% MCR	100% MCR	100% MCR	100% MCR	100% MCR	100% MCR	100% MCR	100% MCR
DOMTAR steam flow **	0	200,000	300,000	0	200,000	300,000	0	200,000	300,000
Cooling tower make-up water	44,700	26,820	15,600	44,640	26,760	15,540	35,712	21,648	12,432
▪ Evaporative Losses	36,300	21,840	12,600	36,180	21,540	12,540	28,800	17,472	10,080
▪ Cooling Tower Blowdown	8,460	4,980	3,000	8,400	5,220	3,000	6,912	4,224	2,352
Demineralizer usage	3,060	23,700	33,840	3,060	23,700	33,840	3,060	23,700	33,840
▪ Process / Steam Cycle Makeup	780	12,840	18,900	780	12,840	18,900	780	12,840	18,900
▪ Demineralizer waste	1,080	9,600	13,680	1,080	9,600	13,680	1,080	9,600	13,680
▪ Boiler Blowdown	600	660	660	600	660	660	600	660	660
▪ Steam Losses	600	600	600	600	600	600	600	600	600
Fire Protection	0	0	0	0	0	0	0	0	0
Miscellaneous Water Uses	600	600	600	600	600	600	600	600	600
Boiler Blowdown Quench	264	300	300	264	300	300	264	300	300
Ash Conditioning	60	60	60	60	60	60	60	60	60

NOTES:

* % of Maximum Continuous Rating -- Boiler output in #/hr is based on 1550 psi and 950 F temp.

****** DOMTAR steam flow in #/hr is based on 180 psi and 450 F temp extraction from turbine.

All flows in gallons per hour (GPH)

Flow rates represent daily average flows and do not represent instantaneous maximum design flow rates.

1.17 REQUIRED PERMITS AND APPROVALS

Table 1.17-1 identifies each permit and approval type required at the federal, state, and local level for the Project. Wisconsin Electric is taking the necessary steps to ensure that appropriate permits and approvals will be obtained to enable construction in accordance with the planned schedule.

Table 1.17-1 Permits, Notices, and Approvals

Agency	Interest or Permit	Contact	Application/ Notice Date	Status
Federal				
Federal Aviation Administration	Notice of Proposed Construction or Alteration	Vivian Vilaro 847-294-7575		
U.S. Army Corps of Engineers	Construction activities in navigable waterways or wetlands	Simone Kolb 715-345-7911		
State				
Public Service Commission	CA for construction	Paul Rahn 608-267-8967	03/15/2010	Under review
Department of Natural Resources	Wisconsin Pollutant Discharge Elimination System (WPDES) permit modification	Mike Hammers 608-267-7640		
Department of Natural Resources	WPDES NR 216 Permit for Storm Water Discharges from construction site > 1 acre	Tim Ryan 608-266-5239	03/15/2010	Under review
Department of Natural Resources	Endangered species review and permitting (if needed)	Ben Callan 608-266-3524		
Department of Natural Resources	Chapter 30 permit	Ben Callan 608-266-3524	03/15/2010	Under review
Department of Natural Resources	Air Pollution Control Construction Permit	Andrew Stewart 608-266-6876		
Department of Natural Resources	Operation Permit	Andrew Stewart 608-266-6876		
Department of Natural Resources	Acid Rain Air Permit	Andrew Stewart 608-266-6876		

Agency	Interest or Permit	Contact	Application/ Notice Date	Status
Department of Natural Resources	Clean Air Interstate Rule	Andrew Stewart 608-266-6876		
Department of Transportation	Driveway permit for access roads	Kelly Nicolas 608-266-3438		
Local				
Village of Rothschild	Zoning code variances	Timothy Vergara 715-359-3660		
Village of Rothschild	Site plan approval	Timothy Vergara 715-359-3660		
Village of Rothschild	Flood Plain approval	Timothy Vergara 715-359-3660		

1.18 CORRESPONDENCE

Copies of correspondence are provided in the following Appendices:

Appendix F, Federal Permits, Notices and Approvals
Appendix G, State Permits, Notices and Approvals
Appendix H, Local Permits, Notices and Approvals

Wisconsin Electric will continue to submit copies of correspondence as they become available.

1.19 SCHEDULE

Wisconsin Electric respectfully requests Commission approval for the Project by the end of 2010. This will allow the Company to finalize the boiler contract and release the boiler vendor for procurement and fabrication by February 2011. The boiler lead time is the critical path to meeting Wisconsin Electric's goal of placing the Project in service in 2013 in order to take advantage of the federal production tax credit PTC for renewable energy resources, which is scheduled to expire at the end of that year. Without the federal tax credit the Project would suffer a heavy financial penalty. The critical path permitting and construction schedule is provided in Appendix I.

1.20 MAJOR CONSTRUCTION ACTIVITIES

All construction activities will be limited to the existing site, utilizing existing mill access roads. No new access is required, but the existing south entrance will be improved to facilitate the increase in construction and operating traffic at this entrance. Existing boundary landscaping (fencing and trees) will be maintained during construction.

Initial activities will include improvement to the south entrance, minor grading, and excavation for foundations. Foundation placement will be followed by structural steel erection, boiler erection, construction of the cooling tower, and enclosure of the buildings. Once the buildings are enclosed, final piping, electrical, and mechanical equipment installation will occur. The material handling systems will be constructed after the need for laydown space for the main boiler building construction is minimized. The new high voltage electrical facilities will be constructed on a schedule that minimizes interferences with other construction activities.

Start-up activities begin with the completion of the high voltage substation which will allow check out of the plant electrical system. Once completed, mechanical systems will be started up and placed in service. Biomass fuel deliveries will begin once the material handling systems are checked out and ready to fuel the boiler.

Final activities include performance and emissions testing of the operating plant, along with final grading and landscaping of the site.

1.21 HAZARDOUS CHEMICALS

Chemicals required for plant operation include treatment chemicals for the cooling tower, boiler water chemicals, demineralized water and condensate polishing treatment chemicals, and aqueous ammonia for NOx control. Most of these chemicals are already present on site, being used in the current mill operation. Separate chemical storage and feed systems will be installed at the plant, due to the distances involved in trying to transport chemicals from the mill to the plant. All chemicals will be stored with appropriate containment, as outlined in the facility Spill Prevention, Control, and Countermeasure ("SPCC") plan. A facility HAZCOM program will be developed to insure the employees are trained in the safe handling of all chemicals used on site. These programs will be consistent with the existing Domtar programs for chemical awareness and handling.

1.21.1 Cooling Tower

Sodium hydroxide (15%) to be used for biological control will be stored in a 6000 gallon bulk tank at the cooling tower. Corrosion inhibitor, scale inhibitor, and Sodium Bromate to help in biologic control will all be stored and dispensed using 250 gallon chemical totes located in the cooling tower pump room.

1.21.2 Boiler Water Chemicals

Boiler water treatment, for both the CFB boiler and the auxiliary boiler, will include carbohydrazide for oxygen scavenging, stored in 250 gallon totes, and mono-sodium, di-sodium, and tri-sodium phosphates, either in dry containers or pre-blended in 250 gallon totes, for pH control. These chemicals will be stored and dispensed in the boiler building.

1.21.3 Demineralized Water Plant

The demineralized water plant will consist of a reverse osmosis system, and a mixed bed demineralizer for final polishing. The condensate polishing system will also be a mixed bed system.

Chemicals for the Reverse Osmosis system will include an antiscalant (polymer), Sodium Hypochlorite, Citric Acid, Sodium Bisulfite, and Sodium Hydroxide. All of these will be stored in 250 gallon totes, with appropriate spill containment.

For both mixed bed demineralizers, 1200 gallon bulk tanks of Sulfuric Acid and Sodium Hydroxide will be installed inside in the water treatment area regeneration. There is also the potential to utilize an off site regeneration service for the mixed beds, which would eliminate the need for chemicals on site. The bulk tanks will be installed with spill containment equal to a minimum of 1 ½ times tank volume.

1.21.4 Aqueous Ammonia

Aqueous ammonia (19%) will be utilized for flue gas NOx control, through a selective non-catalytic reaction process. The chemical will be stored outside in a 10,000 gallon bulk tank, located next to the boiler building, inside appropriate spill containment. Deliveries will be by self unloading tanker truck, with vapor recovery, at a diked area sized to contain the full volume of the truck.

1.21.5 Other Chemicals

There will be several large volumes of oils on the site.

The hydraulic extended arm truck dumper system includes an approximately 2000 gallon hydraulic oil tank. Spill containment and fire protection will be provided for this tank.

The steam turbine-generator will have a lubrication oil tank, with a capacity of 1350 gallons, and a control oil tank, with a capacity of approximately 150 gallons. Both tanks will be provided with appropriate spill and fire protection.

Small volumes of lubricating oils (<50 gallons) may be located throughout the plant, associated with large pumps or gear boxes. These volumes will be managed as part of the overall site SPCC plan.

Minor amounts of cleaners and solvents will be stored on site, in appropriate labeled containers. Lubricating oils and greases will also be stored in secured areas, primarily in 55 gallon drums. Fuel for site vehicles will utilize the existing mill refueling facilities.

1.21.6 Chemicals used during Construction

The chemicals located on-site and utilized during the construction phase of the project consist of primarily of fuel oils, gasoline, oil, grease, propane and compressed gas cylinders utilized for cutting processes. The safe management of these materials will include:

- "Danger, No Smoking" signs will be posted around all flammable and combustible liquid storage areas.
- All above ground tanks will have impervious containment around them of adequate size to contain spills.
- Liquid fuels stored in 5 gallon size, or less, containers will be stored in a fire tight gang box.
- Tanks shall be vented with a pipe not less than 1-1/4 inch inside diameter and be 12 feet high from the adjacent ground level.
- Tanks shall be kept at least 20 feet from buildings.
- At least one 20-pound ABC fire extinguisher is to be kept a distance of no more than 75 feet from tanks.
- All tanks shall be properly grounded.
- All tanks will be labeled with the contents and contractor's name.
- Compressed gas cylinders, whether full or empty, will be stored and transported in an upright position and chained or otherwise secured to prevent tipping.
- Oxygen cylinders in storage will be separated from fuel-gas cylinders or combustible materials (especially oil or grease) a minimum distance of 20 feet or by a 5-foot high noncombustible barrier with a minimum 30 minute fire rating.

A site hazardous materials safety plan will be developed, and training in the plan will be provided to all site personnel. This plan will include emergency response procedures dealing with accidental spill or other chemical release, as well as fire and EMS response procedures.

2.0 NATURAL AND COMMUNITY RESOURCES

2.1 PLANT AND FACILITY MAPS

2.1.1 Map of Proposed Site and Surrounding Area

Appendix J, Plant Location Map, depicts the general location within about 1 mile of the project site in Rothschild. The Project location, shown highlighted in yellow, is on the Domtar property that is adjacent to the east bank of the Wisconsin River. South Line Road and North Grand Avenue (Business U.S. Highway 51) form the eastern edge of the Domtar property. Residential and commercial areas are to the immediate south, east and north of the project site. State Highway 29 is an east-west thoroughfare and is located about 0.5 miles north of the project site. Interstate 39 and U.S Highway 51 is located about 0.5 miles west of the project site.

Other major geographic features include:

- Lake Wausau, located upstream of the Domtar facility dam.

- Mosinee Hill, just under 1,600 feet above mean sea level, located about 1 mile west of the project site.

2.1.2 Site Map

Drawings depicting the project site plan, as well as the overall mill site plan, are contained in Appendix D, Drawings.

2.1.3 Locations of Related Facilities

The Appendix J, Facilities Map shows the proposed location of the cogeneration facilities including a potential connecting ATC electric transmission line..

2.2 MAPS –NATURAL RESOURCES

2.2.1 USGS topographic maps

The Appendix J, General Location and USGS Map, depicts the general location and topography within about 1 mile of the project site in Rothschild.

2.2.2 WDNR wetland maps

Appendix J, Wetlands map shows DNR wetland mapping for the project site and surrounding areas. There are no wetlands at the project site on the Domtar property. There is a mapped wetland shown on the west side of the Wisconsin River in a forested area.

2.2.3 Existing Land Use Map

A separate land use map is not provided. Land uses can be seen on the aerial and zoning maps provided in Appendix J.

2.2.4 Map of publicly owned lands

A map entitled Public Lands is provided in Appendix J.

2.2.5 Flood plain maps

As described in more detail below, the existing 1978 Flood Insurance Rate Maps ("FIRM") accounts for an approximately 3000' long levee along the southern portion of the site to prevent flooding from high water levels in the Wisconsin River. Because Domtar has not conducted the engineering evaluation and received federal approval needed to verify compliance with current safety standards, the protection provided by this levee can no longer be counted on for purposes of establishing which areas are mapped as floodplain on the FIRM. To account for fact that the levee is not a certified structure, the FIRM is being revised and much of the project area will be within the mapped 100 year floodplain. Therefore, the biomass facility will be designed according to the Village of Rothschild requirements for construction within the 100 year floodplain.

In addition to the FIRM, the Marathon County Flood Insurance Study ("FIS") for the project area is under revision. Again, the area will be mapped as if the levee does not exist. Preliminary drafts of the updated FIS and FIRM, dated November 17, 2008, have been released by FEMA for public review and comment. Base flood elevations on the FIRM and FIS are being updated based on water surface elevations computed by hydraulic modeling completed by the U.S. Army Corps of Engineers in 1991. Floodplain boundaries shown on the FIRM are being updated based on these computed water surface elevations and accounting for the fact the existing levee along the southern portion of the site cannot be counted on for flood protection.

To meet requirements of the NFIP, the Village must adopt the new FIRM once it becomes adopted by FEMA. The Letter of Final Determination for the FIRM was dated January 22, 2010. The FIS and FIRM will go into effect 6 months after the Letter of Final Determination. It is anticipated that the Village will adopt the updated FIRM and FIS into their zoning ordinance prior to July 22, 2010, in order to maintain participation in the NFIP.

To comply with the Village of Rothschild requirements for construction within the 100-year flood fringe (Zone AE), new buildings on the Domtar site will have first floor levels set at least 2 feet above the 100 year floodplain elevations. It has been verified, through a hydraulic analysis, that construction of these buildings within the floodplain will not cause a regional floodwater elevation increase of more than 0.01 feet. Appendix Q contains the hydraulic analysis including flood plain maps, which are entitled "Domtar Biomass Project Floodplain Analysis."

2.2.6 Soil survey map

A United States Department of Agriculture Natural Resources Conservation Service soil survey map of the area around the Domtar site is included in Appendix J, Soil Survey Map.

2.2.7 Aerial Photo

The 2008 aerial photograph obtained from the USDA National Agriculture Imagery Program is used as background for several maps provided in Appendix J.

2.3 COMMUNITY MAPS

2.3.1 Zoning

Zoning maps from the Village of Rothschild and the Town of Rib Mountain are provided in Appendix J. The project site is zoned for industrial use (category I-2).

2.3.2 Local Streets

The Facilities Map in Appendix J shows roads, streets and Village boundaries.

2.3.3 Residences

The Facilities Map in Appendix J is at a scale that allows one to determine the distances between the site boundary and nearby residences or other off-site buildings.

2.3.4 Schools, day care centers, hospitals, nursing homes

The Facilities Map in Appendix J depicts the area within one-half mile from the project site. There are no schools, day care centers, hospitals nor nursing homes within this ½ mile radius. The two schools shown on the map, Rothschild Elementary School and Saint Mark's Grade School, are located about one-block outside of the area that depicts the one-half mile radius from the project site.

2.4 DIGITAL AERIAL PHOTOGRAPHS AND LAND USE AND ZONING MAPS

Digital data has been provided separately to the PSC.

2.5 TOWNSHIP, RANGE, AND NEAREST ¼, ¼ SECTION

Construction will take place around the intersection of Town 28N, Range 7E Sections 23 (SE ¼ of the SE ¼), 24(SW ¼ of the SW ¼), 25(NW ¼ of the NW ¼),) and 26(NE ¼ of the NE ¼).

2.6 HISTORY OF SITE

The Domtar mill site has been an active pulp and paper mill since 1910. The area of the site where the Project will be is located has been used primarily for round wood and chip wood storage, along with semi-trailer storage and marshalling as part of the site warehousing and shipping operation. Geotechnical investigation of the site was performed to determine foundation design requirements. The soil borings taken across the site do not indicate any major site contamination or remediation requirements. It is expected that some minor pockets of oil contaminated soil may be encountered during excavation activities, due to the high historic volume of truck traffic in the area. Contaminated soils (if found) will be remediated in accordance with a regulated materials management plan. Activities completed under the plan will comply with applicable Wisconsin Administrative Code Chapters and Code of Federal Regulations, as appropriate.

2.7 CURRENT LAND OWNERSHIP

The current owner of the site is Domtar Paper Company, LLC, 100 Kingsley Park Drive, Fort Mill, SC 29715-6476. Appendix B contains an executed letter of intent committing to executing lease agreements by July 1, 2010 with Domtar for the land required to construct and operate the facility.

The transmission substation, whether owned by ATC or WPS, will be located on the Domtar site. Easements for the substation will be executed when the transmission path is selected. For the WPS transmission path, the existing distribution line corridor will be used, so no new easements or right of way is required. For the ATC transmission path, easements for new transmission line support structures will be required from Domtar, the State of Wisconsin,

and possibly the Town of Rib Mountain/Marathon County depending on the exact route selected.

2.8 LOCAL ZONING

Copies of all zoning ordinances affecting the project site and the area within one-half mile of the site boundary are included in Appendix K.

The local zoning authority for this project is the Village of Rothschild. The site is currently zoned I-2, Heavy Industrial. No zoning or land use change is required for the Project. A variance to the maximum height limit of 65 feet will be required for several of the structures on the site.

The Project will need to be presented to the Rothschild Zoning Board of Appeals for the variances and the Planning and Zoning Commission for the land use permit, site plan approval, landscape plan approval and the stormwater management plan approval. The Village Board must give final approval of all recommendations from the Planning and Zoning Commission.

The Project will need to demonstrate compliance with the Village floodplain ordinance and FEMA regulations, because the site is included in the 2010 FIRM. The Letter of Final Determination for the updated FIRM is dated January 22, 2010, with an effective date of July 22, 2010. The Village will adopt the new FIRM prior to July 22, 2010. Under the previous FIRM, the site was not in the 100 year floodplain, but, in anticipation of the new map being adopted, the Company had a floodplain analysis prepared. The analysis demonstrates that the Project meets the requirements of both the Village ordinance and the FEMA "no rise" standard. The floodplain analysis is provided as Appendix Q.

If the ATC transmission path is selected, part of that line will be located in the Town of Rib Mountain. ATC will need a Conditional Use Permit to erect its utility structures. The land east of Interstate I-39 is zoned SR-2, and the land west of I-39 is zoned ER-1. Such use is permitted as a Conditional Use in both zoning districts.

2.9 LAND USE PLANS

The Village of Rothschild has two relevant planning documents; a Land Use Plan (2000) and a Comprehensive Outdoor Recreation Plan (1999). The Land Use Plan is consistent with development of the Project. The Project site is identified as Heavy Industrial (I-2) in the Land Use Plan. In that regard the Land Use Plan states "Any further expansion of existing industrial uses located adjacent to residential areas should be closely reviewed and development standards should be adhered in order to limit any negative impacts on the established residential areas." River Street Park is within ½ mile of the Project boundary. The Comprehensive Outdoor Recreation Plan calls for this park to be developed and indicates a pedestrian bridge across the Wisconsin River is being planned. These improvements now exist. There are no other areas requiring development within ½ mile of the project boundary identified in the Recreation Comprehensive Outdoor Plan.

A portion of the Town of Rib Mountain is within ½ mile of the Project site. No Project facilities will be located in the Town. If the ATC transmission path is selected, the transmission line will cross a recreational hiking/biking path with connects to the pedestrian bridge noted above at the west side of the Wisconsin River. No other recreation areas have been identified in the transmission corridor, based on the Town Comprehensive Plan (2005).

Copies of the relevant pages of the above mentioned plans are provided in Appendix K, Applicable Local Ordinances & Plans.

2.10 SITE GEOLOGY

The geology of the site includes consolidated sedimentary rock layers. These rock layers were deposited as extensive sequences of sandstone, shale, and limestone or dolomite that comprise the present-day sedimentary rock aquifers and confining beds. Beneath the consolidated sedimentary rock is precambrian crystalline rock. [18] The depth to bedrock near the project site is between 100 and 110 feet.

Site geology and soil conditions are typical for the Wausau area and do not pose unusual circumstances or special conditions. Impact during construction will be limited to foundation installation, earthwork and re-grading. These activities will be accomplished utilizing heavy construction equipment to excavate the area to place the concrete mat foundation. Blasting will not be required for the construction of the Project foundation. Therefore, based on the amount of excavation required, methods used and the type of substrate at the site, construction of the Project is not expected to affect the area's geology.

There will not be any impact to geological formations from the project construction. There are no active mines or quarries within ½ mile of the site.

2.11 ZONING AND LAND COVER IMPACT

The entire Domtar mill site, comprising 85 acres, is zoned industrial (I-2). The project will utilize up to 13.3 acres on the Domtar mill site. No zoning change is required for the project.

2.12 IMPACT TO TOPOGRAPHY

The site has been part of the active mill operation, and is generally flat, with little or no vegetation present. Grading will include removal of unsuitable soils with engineered fill in foundation areas. The remainder of the site will be minimally graded to maintain storm water flow across the site. Minimal cut and fill will be required.

2.13 CONSTRUCTION AREAS

A site plan showing areas planned for parking and laydown is included in Appendix D, Drawings.

[18] Ground Water Atlas of the United States, 1992.

The areas marked for laydown and material storage are currently used as a marshalling area for semi trailers used by the mill for transporting finished goods to market, storage of pulp logs, and for mill maintenance contractor equipment and trailer facilities. During construction, an off-site storage area for trailers will be developed, keeping on site the minimum number of trailers required for day to day shipping requirements. Mill maintenance contractors will be relocated to areas on the site outside of the plant construction footprint. The mill is investigating the development of an off-site storage facility for pulp wood, if needed to manage its raw material inventory.

After construction, areas not needed for active plant operation will be returned to their former uses. The construction parking area will be returned to general mill parking.

The site will be restored per the final site grading and landscape plan. This will include paving of site roads and trailer marshalling areas, gravel in areas not actively used for vehicles, and landscaping as required by Village ordinance.

2.14 SOIL

2.14.1 Local Soils

There are two soil types identified on the project site. The first is a Dunnville fine sandy loam that occurs along the entire length of the project area starting at the bank of the Wisconsin River. The Dunnville loam segment is about 500 feet wide from east to west. The southeast portion of the project area is comprised of Guenther loamy sand. The Guenther sand is the soil type on eastern part of the Domtar property.

2.14.2 Impacts to Local Soils

Soil borings taken in fall of 2009 indicate that the soils in the construction area are not suitable to support the foundations required for plant equipment. These soils will need to be removed, and replaced with engineered fill. The total quantity of soil excavation is estimated to be 50,000 cubic yards. These soils will either be used on-site for non-structural grading, or removed from the site.

The construction site will occupy about 13.3 acres of existing industrial land on the Domtar property, including areas for a storm water detention basin and ATC substation (if needed). Soils exposed during construction may be susceptible to erosion and runoff into the existing surface storm water drainage system. To minimize soil erosion and sediment transport, appropriate best management practices for erosion control will be employed. A detailed construction site and sediment control plan will be developed for the Project that will incorporate the use of appropriate DNR technical standards.

2.15 EXISTING VEGETATION AND WILDLIFE POPULATIONS

The Project site consists of a paved and unpaved area that is within the boundary of an existing paper mill industrial complex. There are no existing vegetation communities on this site.

The project site is an industrial property and does not have resident populations of animals or plant species. There will be neither animal nor plant habitat impacts as a result of the proposed project.

2.16 ARCHEOLOGICAL AND HISTORIC RESOURCES

There will not be any archeological or historic sites affected by the project. Appendix H, Figure H-7 shows the locations of two sites identified from a review of data available from the State Historical Society of Wisconsin, Division of Historic Preservation (October 2009 Data). Both sites are on the opposite side of the Wisconsin River and more than ½ mile from the project site.

Construction will take place around the intersection of Town 28N, Range 7E Sections 23 (SE ¼ of the SE ¼), 24(SW ¼ of the SW ¼), 25(NW ¼ of the NW ¼),) and 26(NE ¼ of the NE ¼).

The proposed project will not affect any archeological or historical resource.

2.17 ENDANGERED, THREATENED, AND SPECIAL CONCERN SPECIES AND COMMUNITIES

A review of the Wisconsin Natural Heritage Inventory ("NHI") database was conducted for an area within a one mile radius of the project site. Based on the results of the NHI database review, impacts to endangered, threatened and special concerns species are not anticipated due to construction and operation of the proposed biomass facility.

A NHI Portal Map showing the Project site and a one-mile and two-mile radius search range is included in the NHI review submitted to the DNR.

Based on the results of the NHI database review, impacts to endangered, threatened and special concerns species is not anticipated due to construction and operation of any facilities associated with the proposed project.

2.18 AIR POLLUTANT EMISSIONS

The Project involves the retirement of the four existing mill boilers once the biomass-fueled CFB boiler is operational. As a result of the biomass CFB boiler's air quality technology and the retirement of mill's existing boilers, the overall emissions at the site are expected to be reduced by approximately 30 percent. Domtar's 2008 mill boilers annual emissions, as reported to the WNDR, are shown in Table 2.18-1

Table 2.18-1 Mill's 2008 Actual Boiler Emissions, ton per year

	Nitrogen Oxides	Carbon Monoxide	Sulfur Dioxide	Particulate Matter (PM, PM_{10} & $PM_{2.5}$)	Volatile Organic Compounds	TOTAL
Boiler #1- 200 mmBtu/hr , Nat. Gas & Distillate Oil	101	30	0.4	3	2	
Boiler #3 120 mmBtu/hr Mixed Solid Fuel	185	167	0.8	14	12	
Boiler #7- 200 mmBtu/hr , Nat. Gas & Distillate Oil	110	33	0.2	3	2	
Boiler #9- 150 mmBtu/hr , Nat. Gas & Distillate Oil	0	0	0	0	0	
Total	396	230	1.4	20	16	644

The expected actual annual emissions for those same emissions from the site once the CFB boiler is operational, considering projected boiler operation and air quality control system performance, are provided in Table 2.18-2

Table 2.18-2 Expected Annual Emissions, ton per year

	Nitrogen Oxides	Carbon Monoxide	Sulfur Dioxide	Particulate Matter (PM, PM_{10} & $PM_{2.5}$)		Volatile Organic Compounds	Total
CFB – 785 mmBtu/hr Woody Biomass	172	218	5	46		16	457

The overall annual site emissions are expected to be reduced by 187 tons per year, or approximately 30 percent.

2.18.1 DNR Air Permits

The Project will require the following DNR air quality permits

- Air Pollution Control Construction Permit, NR 405 and NR 406, Wis. Admin. Code, including determination of Maximum Achievable Control Technology ("MACT") under 40 CFR Part 63
- Part 70 Operation Permit, NR 407, Wis. Admin. Code
- Acid Rain Portion of an Operation Permit, NR 409, Wis. Admin. Code
- Clean Air Interstate Rule, 40 CFR Part 97 and NR 432, Wis. Admin. Code

The Project will be a major source under the Prevention of Significant Deterioration ("PSD") program in Chapter NR 405, Wis. Admin. Code. The Project will be subject to PSD review for carbon monoxide ("CO"), nitrogen oxides ("NO_x"), particulate matter ("PM"), PM_{10}, $PM_{2.5}$, sulfur dioxide, SO_2, organic compounds ("VOC"), and fluorides (as "HF").

An air pollution control construction permit application for this Project will be submitted to the DNR in the near future. This application includes a Control Technology Review or Best Available Control Technology ("BACT") Analysis for the CFB boiler, the natural gas-fueled auxiliary boiler, the cooling tower, the material handling systems, and the diesel engine driven fire pump.

After construction and initial operation, the facility will also require an operation permit under Chapter NR 407, Wis. Admin. Code. Wisconsin Electric must submit information to complete the operation permit application at least four months prior to the expiration of the construction permit.

Because the Project is a utility unit with a generator nameplate capacity of more than 25 MW producing electricity for sale, the new unit is an affected unit under the federal Acid Rain Program set forth in 40 CFR Part 72 and the Clean Air Interstate Rule set forth in 40 CFR Part 97. The Project will require federal Acid Rain Program and Clean Air Interstate Rule permits. These permits are administered by the DNR.

Section 112 of the 1990 Clean Air Act Amendments requires the EPA to develop standards to control major sources of hazardous air pollutants to levels consistent with the lowest emitting facilities in similar source categories. These National Emissions Standards for Hazardous Air Pollutants require the application of maximum achievable control technology ("MACT"). Section 112(g)(2) of the Clean Air Act requires a "case-by-case" MACT determination for new major sources where EPA has not established applicable standards. Because the EPA has not established MACT standards for new industrial boilers, a case-by-case MACT analysis and review for the biomass-fueled and natural gas-fueled boilers will be conducted by the DNR. As a result, pursuant to Wis. Admin. Code § NR 445.01(1)(b), the DNR will not be preparing a separate analysis of those hazardous air pollutants ("HAP") under Chapter NR 445, Wis. Admin. Code.

2.18.2 Air Emissions Modeling and Results

2.18.2.1 Fuel Type(s)

The primary fuel for the CFB boiler will be woody biomass, primarily in the form of logging residues, and wood bark, wood waste, and wastewater treatment plant residue from the Domtar Mill. The boiler will also be equipped with natural gas start-up burners. Natural gas may also be used for combustion support during upset conditions.

Two auxiliary natural gas-fueled package boilers will be used to provide steam to the Domtar facility when the CFB boiler is unavailable. The auxiliary boilers will be designed to only fire natural gas.

2.18.2.2 Emission Control Technologies

Based on the control technology review in the air pollution control construction permit application, the advanced CFB boiler is designed to fire woody biomass fuels utilizing good combustion practices, selective non-catalytic reduction for nitrogen dioxide control, and a fabric filter baghouse for particulate matter control including fine particulates ($PM_{2.5}$). Table 2.18-3 summarizes the proposed control technologies and emission limits that represent BACT for the CFB boiler. Table 2.18-4 summarizes the proposed control technologies and emission limits representing BACT for the natural gas-fueled auxiliary package boilers. Figure 2.18-1 is a depiction of the CFB boiler power block showing the furnace, cyclone, baghouse, and stack.

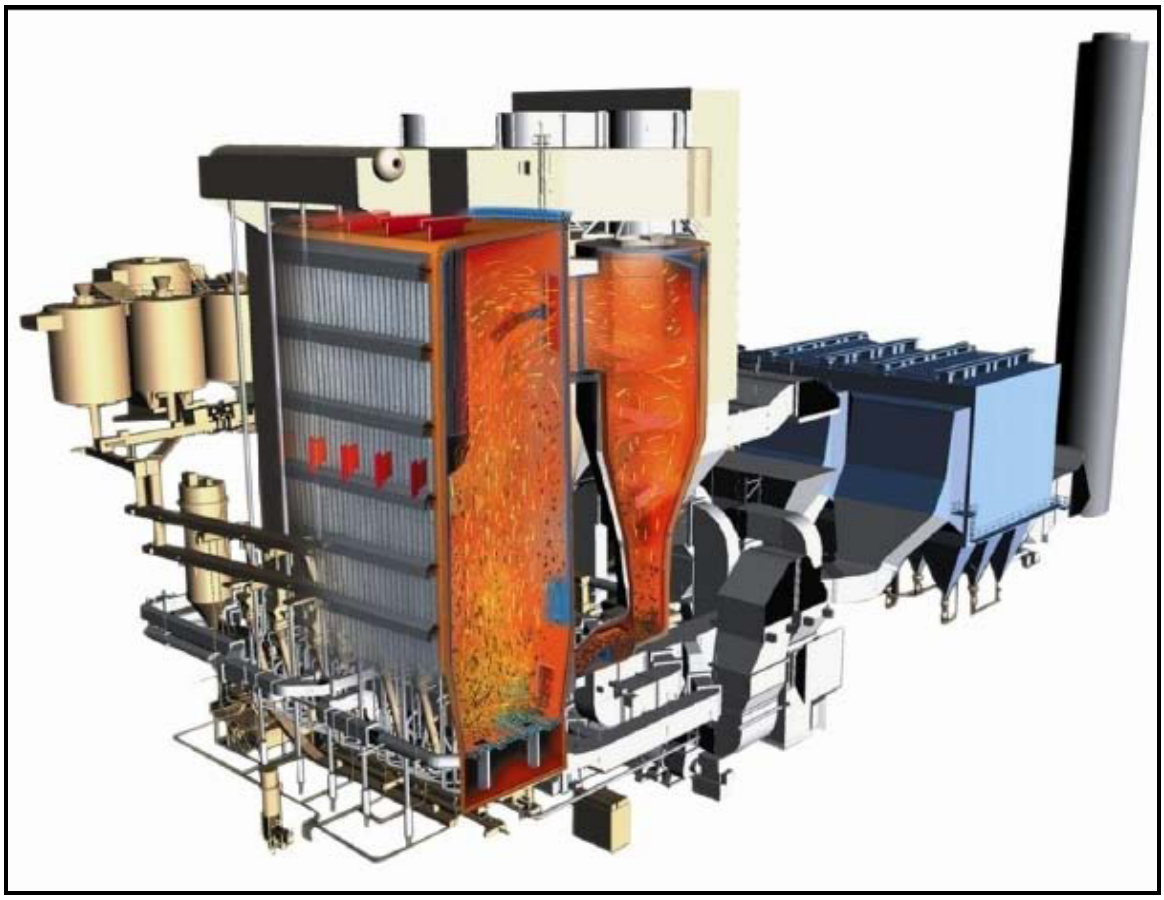

Figure 2.18-1 Typical CFB Boiler

Table 2.18-3 Control Technologies & Emission Limits for Biomass-fueled Boiler

POLLUTANT	PROPOSED CONTROL TECHNOLOGY	PROPOSED LIMIT, lb/mmBtu	POTENTIAL TO EMIT, ton/year
Carbon Monoxide (CO)	Circulating Fluidized Bed Boiler and Good Combustion Practices	0.20	701
Nitrogen Oxides (NO_x)	Circulating Fluidized Bed Boiler and Selective Non-Catalytic Reduction	0.10	350
Particulate Matter (PM / PM_{10})	Fabric Filter Baghouse	0.03	105
PM < 2.5 microns ($PM_{2.5}$)	Fabric Filter Baghouse with Felted Filter Media	0.023	88
Sulfur Dioxide (SO_2)	Circulating Fluidized Bed Boiler and Low Sulfur Biomass Fuels	0.09	315
Organic Compounds (VOC)	Circulating Fluidized Bed Boiler and Good Combustion Practices	0.017	60

Table 2.18-4 Control Technologies & Emission Limits Representing BACT for Each Natural Gas-Fueled Auxiliary Package Boilers

POLLUTANT	PROPOSED CONTROL TECHNOLOGY	PROPOSED LIMIT, lb/mmBtu	POTENTIAL TO EMIT, ton/year
Carbon Monoxide (CO)	Good Combustion Practices	0.06	32
Nitrogen Oxides (NO_x)	Ultra Low NOx burners and combustion optimization	0.02	10
Particulate Matter (PM / PM_{10})	Good Combustion Practices and Natural Gas Fuel	0.0075	3.6
PM < 2.5 microns ($PM_{2.5}$)	Good Combustion Practices and Natural Gas Fuel	0.0075	3.6
Sulfur Dioxide (SO_2)	Natural Gas Fuel	0.0015	0.7
Organic Compounds (VOC)	Good Combustion Practices	0.005	2.5

2.18.2.3 Estimated hourly emission rates in pounds per hour at full, 80%, 60%, and 40%

Table 2.18-5 is a summary of the hourly emission rates of criteria, PSD, and mercury emissions for the biomass-fueled CFB boiler. Please note that the data in Table 2.18-5 has a minimum load of 40% because this is the minimum stable load for the CFB boiler.

Table 2.18-5 Estimated Hourly Emission Rates for Biomass-fueled Boiler

Pollutant		Maximum Hourly Emission Rate, lb/hr			
		40% Load	60% Load	80% Load	100% Load
Carbon Monoxide	CO	46.8	70.4	93.8	160.0
Nitrogen Oxides	NOx	49.9	56.3	50.0	80.0
Particulate Matter	PM / PM_{10}	9.4	14.1	18.8	24.0
Particulate Matter	$PM_{2.5}$	7.2	10.8	14.4	18.4
Sulfur Dioxide	SO2	28.1	42.2	56.3	72.0
Organic Compounds	OC	5.3	8.0	10.6	13.6

2.18.2.4 Estimated Maximum Allowable Annual Emissions

The total potential annual emissions for the Project are summarized in Table 2.18-6

Table 2.18-6 Estimated Maximum Allowable Annual Emissions

POLLUTANT		Estimated Maximum Expected Annual Emission, ton/year					
		CFB Boiler	NG Boiler	Diesel Feedwater Pump	Material Handling	Cooling Tower	TOTAL
Carbon Monoxide	CO	700.8	65.1	0.11			**766**
Nitrogen Oxides	NO_x	350.4	21.7	0.13			**372**
Particulate Matter	PM / PM_{10}	105.1	8.2	0.007	7.4	0.3	**121**
Particulate Matter	$PM_{2.5}$	80.6	8.2	0.005	3.6	0.2	**93**
Sulfur Dioxide	SO_2	315.4	0.7	0.0003			**316**
Volatile Organic Cmpds	VOC	59.6	6.5	0.13			**66**

2.18.2.5 Air Quality Impacts from Proposed Project

The purpose of a dispersion modeling impact analysis is to demonstrate, through the use of air quality dispersion models, that allowable emissions from the proposed sources will not cause or contribute to violations of any National Ambient Air Quality Standard ("NAAQS"), or of any applicable PSD increment.

National Ambient Air Quality Standards

The Clean Air Act requires the U.S. EPA to establish NAAQS for air pollutants which may be injurious to public health or welfare. The following pollutants have NAAQS:

- Particulate matter less than 10 microns (PM_{10})
- Particulate matter less than 2.5 microns ($PM_{2.5}$)
- Sulfur dioxide (SO_2)
- Carbon monoxide (CO)
- Nitrogen Oxide (NO_2)
- Ozone (O_3)
- Lead (Pb).

These pollutants are collectively referred to as "criteria pollutants". NAAQS are also specified under NR 404, Wis. Admin. Code. The NAAQS are summarized in Table 2.18-7.

PSD Increments

In the Clean Air Act Amendments of 1977, Congress specified the classification of lands for PSD purposes. Areas where existing air quality is considered to be of national importance were classified as Class I areas. These mandatory Class I areas include all international parks, national memorial parks larger than 5,000 acres, and national parks larger than 6,000 acres that were in existence when the Amendments were passed. All other areas to which the PSD provisions apply were classified as Class II.

Wisconsin has two Class I PSD areas, the Federal Rainbow Lake Area located in the Chequamagon National Forest (located approximately 200 km distant from the proposed facility), and the recently redesignated non-Federal Forest County Potawatomi (FCP) reservation in Forest County (located approximately 99 km distant from the proposed facility). Generally, if a PSD project is located within 100 km of a Class I area, a Class I air quality impact analysis may be required. However, based on guidance developed by the Federal Land Managers of Class I areas, an "initial screening test" may be performed to determine if air quality and visibility impact analyses are required. This screening test uses the sum of the annual total emissions (in tons per year) of SO_2, NOx, PM_{10}, and H_2SO_4, divided by the distance to the Class I area (in km), to determine the "Q/D" ratio. If the ratio is less than 10, then the Federal Land Managers do not require Class I impact analyses. Based on the emissions of the proposed facility and the 99 km distance to the FCP Class I area, the ratio is calculated to be 7.4. Therefore, this facility should not be required to perform a Class I impact analysis for either of the Wisconsin Class I areas**.**

Because the proposed facility is classified as a PSD major source, a Class II PSD increment analysis must be performed. The proposed facility is located in Marathon County, and the PSD baseline for Marathon County has been set at various times for PM_{10}, SO_2, and NO_x. The established allowable Class II PSD increment values are also summarized in the Table 2.18-7.

Table 2.18-7 NAAQS, PSD Class II Increments, and PSD Significant Impact Levels

Pollutant	Averaging Period	Nat. Ambient Air Quality Standard $\mu g/m^3$	Significant Impact Level $\mu g/m^3$	PSD Class II Increment $\mu g/m^3$
Nitrogen Oxides (NO2)	Annual	100	1	25
	1-hour	188	n/a	n/a
Carbon Monoxide (CO)	8-hour	10,000	500	n/a
	1-hour	40,000	2000	n/a
Particulate Matter (PM_{10})	Annual	50	1	17
	24-hour	150	5	30
Particulate Matter ($PM_{2.5}$)	Annual	15	0.3	n/a
	24-hour	35	1.2[19]	n/a
Ozone** (O_3)	8-hour	80	n/a	n/a
Sulfur Dioxide (SO_2)	Annual	80	1	20
	24-hour	365	5	91
	3-hour	1,300	25	512
Lead	3-month	0.15	n/a	n/a
	Quarterly	1.5	n/a	n/a

Background Ambient Concentration Levels

Background concentrations represent the air quality resulting from emissions of local sources as well as concentrations from distant emission sources. The air quality in Marathon County is generally very good, and Marathon County is considered attainment for all criteria air pollutants. Table 2.18-8 is a summary of the background criteria air pollutant (NO_2, SO_2, PM, $PM_{10,}$ and CO) concentrations as provided by the DNR. The $PM_{2.5}$ and 1-hr NO_2 background concentrations may be revised as EPA issues additional guidance on implementation of the two standards.

[19] The SILs listed for $PM_{2.5}$ are the lowest of EPA's currently proposed values.

Table 2.18-8 Air Pollutant Background Concentrations for Marathon County

Pollutant	Averaging Period	Concentration µg/m^3
NO_2	Annual	8.0
	1-hour	77
Carbon Monoxide (CO)	1-hour	950.5
	8-hour	904.7
Sulfur Dioxide (SO_2)	3-hour	11.8
	24-hour	11.2
	Annual	5.4
Particulate Matter < 10 µm (PM_{10})	24-hour	29.4
	Annual	10.2
Particulate Matter < 2.5 µm ($PM_{2.5}$)	24-hour	25.6
	Annual	8.7
Lead	Quarterly	0.01

NAAQS Impact Modeling Results

The latest version of EPA's preferred regulatory model AERMOD (09292) was used in this dispersion modeling analysis, with five years of representative meteorological data from the Wausau Municipal Airport (processed by the DNR). The modeling procedures followed standardized EPA and DNR guidance. EPA recently promulgated revised $PM_{2.5}$ and 1-hr NO_2 NAAQS, and is in the process of developing implementation and modeling guidance for both standards. Additional modeling may be prepared if required by future EPA guidance for implementation of these standards. The Project will comply with the requirements of the $PM_{2.5}$ and NO_2 NAAQS.

In this dispersion modeling analysis, a significant impact analysis was first performed to determine the increases in ambient air concentrations caused by the proposed Project sources (for those pollutants with emissions that exceed the Significant Emission Rates). When the maximum ambient concentrations of a pollutant are below the Significant Impact Level ("SIL") for all averaging periods, the emissions from the proposed source are determined to result in an insignificant impact on ambient air concentrations, and further air quality analyses are not required (the SILs are listed in Table 2.18-9). If the source's ambient impacts exceed the SIL for any pollutant and averaging interval, the extent of the geographical area in which the source exceeds the SIL is determined, and a cumulative impact analysis is performed for that pollutant and averaging interval. The cumulative analysis considers impacts from the proposed sources, other nearby sources, and background air quality monitored concentrations (which represent the contributions of all other sources not explicitly modeled).

The results of the significant impact analysis are summarized in Table 2.18-9. From Table 2.18.9, the maximum impacts from the Project for carbon monoxide, NO_2, and the annual

SO_2 impacts are all below the significant impact levels. Therefore, emissions from the Project will have an insignificant impact on air quality for these pollutants and averaging intervals and meet the NAAQS requirements.

Table 2.18-9 Significant Impact Modeling Results

Pollutant	Averaging Period	Significant Impact Level, $\mu g/m^3$	Highest Modeled Concentration, $\mu g/m^3$
CO	8-hour	500	104
	1-hour	2,000	213
NO_2	Annual	1	0.93
SO_2	Annual	1	0.98
	24-hour	5	12.7
	3-hour	25	55.9
PM_{10}	Annual	1	5.6
	24-hour	5	20.5
$PM_{2.5}$[20]	Annual	0.3	1.5
	24-hour	1.2	7.6

For those pollutants and averaging periods for which the Project impacts are greater than the significance levels, cumulative modeling analyses were performed that considered emissions from both the Project sources and other nearby sources. The DNR provided the cumulative NAAQS and PSD source inventory for other facilities in the impact area, which included the nearby significant emission sources.

As noted above, EPA recently promulgated a revised 1-hr NO_2 NAAQS, but has not yet provided 1-hr NO_2 SILs to determine when a cumulative 1-hr NO_2 NAAQS analysis is required. As a precautionary measure, even though the annual NO_2 impacts from the Project are insignificant and do not trigger a cumulative annual NO_2 NAAQS analysis, a cumulative 1-hr NO_2 NAAQS analysis was performed.

The results of the cumulative NAAQS analysis are summarized in Table 2.18-10. The NAAQS results demonstrate that the Project will not cause or contribute to air quality impacts that exceed the NAAQS.

[20] The SILs listed for $PM_{2.5}$ are the lowest of EPA's currently proposed values.

Table 2.18-10 Cumulative NAAQS modeling Results

Pollutant	Averaging Interval	Cumulative Impact, ug/m^3	Background, ug/m^3	Total, ug/m^3	NAAQS ug/m^3	% of NAAQS
NO_2	1-hour	61	77	138.3	188	74%
SO_2	24-hour	252	11.2	263.2	365	72%
	3-hour	1101	11.8	1113	1300	86%
PM_{10}	24-hour	50.8	29.4	80.2	150	53%
$PM_{2.5}$	Annual	2.2	8.7	10.9	15	73%
	24-hour	8.6	25.6	34.2	35	98%
Lead	24-hour	0.00066	0.01	0.01066	0.15	7%

PSD increment modeling results

If the proposed source's maximum modeled air pollutant concentrations exceed the significant impact level (SIL) for any pollutant and averaging interval, a cumulative PSD increment impact analysis is also performed for that pollutant and averaging interval. The results of the cumulative Class II PSD increment analysis are summarized in Table 2.18-11. The SO_2 3-hr and 24-hr and the PM_{10} 24-hr concentrations are the highest second-high concentrations. The PSD increment results demonstrate that the Project will not cause or contribute to air quality impacts that exceed the PSD increments.

Table 2.18-11 Cumulative PSD Increment Modeling Results

Pollutant	Averaging Interval	Maximum Impact, ug/m^3	PSD Increment ug/m^3	% of PSD Increment
PM_{10}	Annual	5.7	17	34%
	24-hour	22.0	30	73%
SO_2	24-hour	84.8	91	93%
	3-hour	294	512	57%

2.18.3 Electric generating facility CO_2

Combustion of woody biomass results in greenhouse gas ("GHG") emissions, the majority being CO_2. However, these emissions can be considered "net zero" or "carbon neutral" if they are considered to be part of the natural carbon cycle, i.e., the carbon uptake by trees to produce biomass is assumed to be nearly equal to the carbon released in the combustion process. Assuming carbon neutrality for biomass-fueled projects presumes that biomass growth and harvest are maintained on a sustainable basis, i.e., that harvested biomass is replaced by re-growth at the same rate. Wisconsin's Woody Biomass Harvesting Guidelines are intended to assure sustainable forestry practices and are a fundamental part of fuel procurement for this project, as explained in more detail elsewhere in this document.

Biomass as a fuel source was assumed to be carbon neutral by the Technical Advisory Committee of the Governor's Task Force on Global Warming, which determined that for purposes of modeling GHG reduction policies, no CO_2 emissions should be assumed to result from the combustion of biomass. The carbon neutral nature of biomass as a fuel source has also been recognized by federal legislation introduced in both the House and the Senate. In the House, H.R. 2454, the American Clean Energy and Security Act of 2009, Title II, Subtitle A, excludes GHG emissions from the combustion of renewable biomass from the overall emissions cap, and generators would not have to obtain emission credits for these emissions. A draft bill introduced in the Senate, S. 1733, the Clean Energy Jobs and American Power Act, likewise excludes renewable biomass from the proposed cap and trade program.

For all of these reasons, it is appropriate for purposes of this application to treat the electric generation facility as carbon neutral.

2.18.4 Annual organic and inorganic HAP emission estimates

The hazardous air pollutants ("HAP") emitted from biomass-fueled boilers may be classified in 4 categories:

CATEGORY	EXAMPLE
1. Inorganic, solid phase HAPs.	Arsenic, cadmium
2. Inorganic, acid gas HAPs.	Hydrochloric acid
3. Organic HAPs.	Formaldehyde, Toluene
4. Mercury	

Emission rates are influenced by the chemical characteristics of the fuels, a complex interaction between the various constituents in the fuels, the overall effectiveness of the combustion process itself, and the emission control technologies employed. Inorganic, solid phase HAPs occur as trace substances in biomass fuels, and to a lesser extent, in natural gas. These substances are emitted in solid form, and are effectively controlled by modern, high efficiency particulate matter control devices such as a fabric filter baghouse.

Inorganic, acid gas HAPs include primarily hydrochloric acid and hydrofluoric acid. These acid gases are formed from elemental chlorine and fluorine trace concentrations in the biomass fuels. Hydrochloric acid and hydrofluoric acid are acids and are therefore highly reactive. These acid gases are effectively controlled by the highly alkaline wood fly ash from biomass combustion in combination the fabric filter baghouse.

Organic HAPs are formed from biomass-fueled boilers as a result of incomplete combustion. These HAP emissions are best controlled through good combustion practices and the advanced design of the CFB.

Mercury is a unique pollutant. Woody biomass fuels have very low mercury concentrations, and in combination with state-of-the-art particulate matter control systems, such as fabric filter bag houses, will result in very low mercury emission from the Project.

A summary of the estimated potential HAP emissions from the biomass-fueled boiler is provided in Table 2.18-12. The HAPs include those listed in the 1990 Clean Air Act

Amendments, or in Chapter NR 445, Wis. Admin. Code. The HAPs potential emissions were estimated using U.S. EPA's AP-42, 5th Edition, Wood Residue Combustion, Tables 1.6-3 and 1.6-4. for uncontrolled wood combustion. A complete analysis of the HAPs is included in the air permit application.

Table 2.18-12 Summary of HAP Emissions by Category

Pollutant Category		Potential to Emit	
		tons/yr	% of Total
1	Inorganic, Solid-Phase (20 HAPs)	10.6	8%
2	Inorganic Acid Gases (2 HAPs)	66.6	52%
3	Organic (85 HAPs)	50.1	39%
4	Mercury	0.010	0.008%
	TOTAL	**127.3**	**100%**

2.18.5 Dust Control

Dust emissions will be minimized during construction by minimizing the extent of disturbed areas where removal of vegetation and topsoil is required, and by placing gravel on access roads and material lay down areas. Graded areas will be seeded as soon as possible to control fugitive dust, erosion, and runoff. Water tank trucks will also be used as necessary to control dust from roads and work areas. In addition, much of the facility site already has paved access roads which will limit tracking and dust.

Biomass fuel will be transported to the facility in chipped form by covered trucks, supplemented by existing mill wood room waste. During plant operation, all permanent access roads will be paved to prevent dust emissions from vehicle traffic. The biomass receiving facility will include two hydraulic extended arm truck dumpers and a reclaim hopper for self unloading trucks. Dust emissions from this operation will be minimized by the inherent moisture in the wood product, augmented by a dust collection system.

For the fuel conveying and processing systems, dust collection systems will be installed at transfer and processing points as required. The air from these systems and from transfer point in the system will be cleaned using a fabric filter baghouse before the air is exhausted to the atmosphere

The ash handling and storage silo system will incorporate a fabric filter baghouse to manage dust.

2.19 WATERWAYS AND WETLANDS

The project will be located on the south side of the existing Domtar paper mill property located adjacent to the Wisconsin River. Cooling water for the project will be supplied from the existing water intake system and most wastewaters will be routed to the Domtar

biological treatment facility prior to discharge from the existing outfall structure on the south bank of the Wisconsin River.

The Wisconsin River is within ½ mile of the property boundary and it is classified as both a state and federal (Army Corps "Section 10") navigable waterway.

If the ATC 115 kV transmission path is chosen for interconnection, the transmission line will cross the Wisconsin River. Construction of the line will require support towers to be erected near each bank of the river. Elevation of the line will be set to provide the required clearance for navigation on the river.

The Appendix J map entitled Wetlands is the DNR wetland map for the Project site and surrounding areas. There are no wetlands at the Project site on the Domtar property. There is a mapped wetland shown on the west side of the Wisconsin River in a forested area. The exact boundary of this wetland has not been delineated.

The mapped wetland on the west side of the Wisconsin River has a Wisconsin wetland inventory classification of T3K (floodplain forest wetland). There are also constructed wetlands, built by the Wisconsin Department of Transportation, southeast of the I-39/USH 51 and STH 29 interchange. These wetlands were part of a wetland mitigation project associated with the interchange reconstruction. If the ATC 115 kV transmission system is required to provide the electrical interconnection for the Domtar facility, it appears that a substation location and route for the towers can be selected that avoids the need for a wetland fill. If, however, there is not a practical alternative to locating the substation and/or transmission towers in a wetland, then ATC will need to submit permit applications to authorize the needed wetland fill as required by DNR Chapter 30 and Army Corps of Engineers regulations.

The project and related infrastructure is not adjacent to nor will it impact wetlands in or adjacent to an area of special resource interest as defined by Chapter NR 103.04, Wis. Admin. Code. The project and related infrastructure will it impact any Cold Water Community aquatic resources as defined by Chapter NR 102.04(3)(a), Wis. Admin. Code.

The Project is located along the Wisconsin River, a direct tributary to the Mississippi River. The project and related infrastructure is not adjacent to nor will it impact wild and scenic rivers. The project and related infrastructure is not adjacent to nor will it impact state-designated river-ways. The project and related infrastructure is not adjacent to nor will it impact state-designated scenic urban waterways.

The Project and related infrastructure is not adjacent to nor will it impact any environmentally sensitive areas or corridors. This project will not impact areas identified in an area-wide water quality management plan, special area management plan, special wetland inventory study, or an advanced delineation and identification study. There are no calcareous fens in the project area.

There are no state parks near the project area. Immediately south of the Domtar property, there is a bike/walking path with a bridge crossing over the Wisconsin River that leads to a nature preserve. The biomass plant footprint will not affect any of these areas. The Project and related infrastructure is not adjacent to nor will it impact state or federal fish and wildlife refuges/management areas.

The Project and related infrastructure is not adjacent to nor will it impact state or federal wilderness areas. The project and related infrastructure is not adjacent to nor will it impact State designated or dedicated natural areas. The project and related infrastructure is not adjacent to nor will it impact state-designated wild rice waters.

Chapter NR 103, Wis. Admin. Code, Water Quality Standards for Wetlands, requires the applicant to demonstrate that all practicable alternatives to avoid and minimize wetland impacts have been considered. The term "practicable" is defined in the administrative code as, "… available and capable of being implemented after taking into consideration cost, available technology and logistics in light of the overall project purposes." There will not be impacts to wetlands as part of the biomass facility construction. There may, however, be impacts to wetlands if the ATC 115 kV transmission system is required to provide the electrical interconnection for the Domtar facility.

The Project site is immediately adjacent to the Domtar paper mill that will be integrated to the proposed facility for combined steam heat and power needs. There are no wetlands located within the proposed facility footprint. Therefore, wetlands did not factor into the site selection process.

2.20 WATER SOURCE, CONSUMPTION, AND DISCHARGE – GENERAL

Table 1.16-1 shows the water balance for the facility under a variety of operating conditions. Total monthly average consumptive (evaporative) water losses from the biomass facility cooling tower and other minor steam losses are projected to be about 400 gallons per minute (gpm), or 576,000 gallons per day (gpd). The maximum consumptive water loss will be about 615 gpm, or about 885,600 gpd. Water for the operation of the biomass facility will be supplied by the existing Wisconsin River water intake operated by Domtar. There will not be a need to increase the rate of withdrawal beyond the amount currently authorized by the DNR. Therefore, because the consumptive will not be more than 2,000,000 gpd in any 30-day period, the water loss approval process of Wis. Stat. § 281.35(4)(b) is not applicable.

2.21 WATER SOURCE – SPECIFIC

Potable water for the facility will be provided by the Village of Rothschild Water Utility. It will be used for drinking water, sanitary and shower facilities for the plant staff. The Village Water Utility currently supplies 1,274 customers, with a system capacity of 3.412 million gpd. The maximum potable water demand for the new power facility will be approximately 50 gpm, for emergency safety shower and eyewash consumption. Normal use is estimated at 450 gallons per day, which will have minimal impact on the Village system. Water to the site will be provided by a 3 inch connection to the existing Village water system, either at the

existing 4 inch connection to the Domtar waste water treatment facility located in River Road, or the 6 inch water main located in Rothschild Street, both adjacent to the property.

Raw water for the facility will be provided by Domtar, from its existing intake structure located on the Wisconsin River, adjacent to the paper mill dam, which forms Lake Wausau. This water will be used for boiler water make up, non-contact cooling water for plant equipment, boiler blowdown cooling, and make up to the cooling tower.

Water for process and cooling uses will be withdrawn from the water intake structure integrated into the dam on the Wisconsin River. This facility has seven turbines to generate hydroelectric power. Each turbine is located in a separate turbine pit with a rectangular head gate equipped with a trash rack (bar screen). Water supply for the mill comes from three intake pumps located over three different turbine pits. These three pumps supply process and cooling water for the mill. These pumps also will provide water required for the biomass project.

Two of the pumps have variable speed drives and are rated at 10,000 gpm each. The third pump is rated at 12,000 gpm and is operated at a constant rate with excess flow returned to the river. A fourth pump rated at 3,000 gpm is also available for emergency back-up needs. On average, the mill withdraws 7.3 million gallons per day (mgd) (almost 5,100 gpm) from the Wisconsin River for process and cooling water. The maximum amount of water withdrawn for existing Domtar process and cooling needs is about 12 mgd (about 8,340 gpm) and the addition of the biomass plant will not result in an increased flow above the 12 mgd level.

The Project will replace the existing paper mill boilers. The primary consumptive use in the current boilers is make-up water for the steam used in the papermaking process that is not collected and returned as condensate. The average make up requirement is 100,000 pounds/hour, with a peak requirement of 150,000 pounds/hour. The new facility will have a similar make up requirement for boiler water.

The estimated water use for non-contact cooling water and boiler blowdown is shown on Table 1.16-1. Flows are shown in gallons per hour for summer, annual average and winter conditions and account for variability in Domtar steam flow demands.

The facility will utilize mechanical draft cooling towers to remove heat from the condenser cooling water. This will result in both an evaporative water loss and a discharge from the cooling tower, referred to as “blowdown,” that is required to maintain cooling tower chemistry. The monthly average consumptive (evaporative) water losses from the biomass facility cooling tower and other minor steam losses are projected to be about 400 gpm (0.576 mgd). Cooling tower blowdown will average about 70 gpm (0.1 mgd) and vary from a low end discharge rate of about 30 gpm (0.43 mgd) to a high end rate of about 145 gpm (0.21 mgd).

An “Intake Structure Evaluation” was performed as part of the WPDES permit reissuance in March 2009. This evaluation is required because, pursuant to § 283.31(6), Wis. Stats:

> Any permit issued by the department under this chapter which by its terms limits the discharge of one or more pollutants into the waters of the state may require that the location, design, construction and capacity of water intake structures reflect the best technology available for minimizing adverse environmental impact.

To implement § 283.31(6), Wis. Stats, the DNR assessed the intake as an existing facility and used its "best professional judgment" standard. In conducting its evaluation, DNR examined the maximum approach velocity at each of the hydroelectric turbine trash racks when the flow rate was equal to the maximum process and cooling water demand from the Domtar facility. Under this condition, the maximum velocity at the point where river water passes through the trash racks was determined to be 0.09 feet per second. Domtar's 12 million gpd maximum process and cooling water requirement represents 2.0 percent of the Wisconsin River 7-day Q_{10} (7 day low flow with a 10 year recurrence interval).

Local conditions relating to a nearby fishery were also investigated as part of the DNR intake structure evaluation. The DNR local fish biologist stationed at Wausau reported no known adverse impacts to the fishery of the Wisconsin River caused by the Domtar mill processing and cooling water intakes.

The DNR evaluation of the water intake was limited to the Domtar facility's use of a maximum of 12 million gpd of cooling and process water. This is because the Department has determined that hydroelectric generating facility intakes are not regulated under § 316 of the Clean Water Act or § 283.31(6), Wis. Stats. After evaluating the intake location, low approach velocities, low percentage of the Wisconsin River withdrawn and lack of any currently known significant impacts on the aquatic life in the river, DNR concluded that Domtar's process and cooling water intakes meet the requirements of § 283.31(6), Wis. Stats.

The March 2009 permit contains a requirement that Domtar provide advance notice of any planned changes to the location, design, operation or capacity of the intake system. Plans for this project will be described in more detail in a separate letter report to the DNR as required by section 2.2.4.5 of the Domtar WPDES permit.

Because the intake system's design capacity will not be increased to accommodate this project, the project would not be considered a "new facility" for the purposes of EPA's rules. This is based on 40 C.F.R. 125.83(2)(ii) which provides examples of facilities which would ***not*** be considered "new:"

> A facility has an existing intake structure. Another facility (a separate and independent industrial operation), is constructed on the same property and connects to the facility's cooling water intake structure behind the intake pumps, and the design capacity of the cooling water intake structure has not been increased. This facility would not be considered a ''new facility'' even if routine maintenance or repairs that do not increase the design capacity were performed on the intake structure.

Therefore, the combined paper mill and electric generating facility will remain an existing facility for the purposes of EPA's intake structure rules. As such, Wisconsin Electric expects DNR's "Intake Structure Evaluation" and final permit decision regarding the intake will remain in effect.

2.22 WATER DISCHARGE

2.22.1 Discharge Location

Sanitary sewer service will be provided through the Village of Rothschild Department of Public Works. The Village is a customer of the Rib Mountain Metropolitan Sewerage District ("RMMSD"). The RMMSD treatment plant has a capacity of 4.27 mgd. The power plant will connect to the system with a 6 inch gravity sanitary sewer, with an estimated flow of 450 gpd. The connection will be made at the existing 8 inch sanitary sewer located in Rothschild Street/South Line Road.

Process wastewater from the biomass facility, following treatment, will be discharged via Domtar WPDES permit outfall 010 to the Wisconsin River.

2.22.2 Discharge Quantities

Estimated rates of discharges are shown in Table 1.16-1. Collectively, these discharges will be a maximum of about 380 gpm or 0.547 mgd. During average operating conditions, the combined biomass discharges would be about 250 gpm or 0.360 mgd. Based on average conditions, the biomass facility discharges would constitute about 5% of the flow (6.8 mgd average) being processed though the existing Domtar treatment facility.

2.22.3 Discharge Structures

Existing outfall structures are built into the east bank of the Wisconsin River. These outfalls are constructed of reinforced concrete pipe with concrete wing-walls and rock rip-rap for protection from scouring during high water levels in the river.

2.22.4 Evaluation of Water Discharges

Discharges from the biomass facility will be to the Domtar wastewater treatment facility prior to final discharge via WPDES permit outfall 010 to the Wisconsin River. The quality of the final outfall 010 discharges is not expected to be significantly different following the operation of the biomass facility. Therefore, it is expected that the existing wastewater treatment facility will continue to meet existing effluent limitations and no new limits will be necessary.

The primary discharge from the biomass facility will be from the operation of the cooling tower system. This system is designed to remove heat from the condenser cooling water. Heat is transferred to the atmosphere by means of evaporative cooling accomplished by the operation of mechanical draft cooling towers. Because cooling water is continuously evaporated from the towers, the concentration of substances naturally present in the

Wisconsin River raw water supply will be increase by a factor of about ten. There will also be additives used for bio-fouling control, corrosion inhibition and for the control of scale and silt build-up. To maintain proper water chemistry control in the re-circulating cooling water system, there is a continuous "blowdown" of water from this system that will be routed to the Domtar waste water treatment plant.

There will also be discharges associated with the water treatment operations. Boiler water will be produced by purifying filtered river water by means of ultra-filtration, reverse osmosis and mixed bed demineralizers. Discharges from these water purification systems will consist of a concentration of any constituents present in the filtered Wisconsin River water, plus any additives used to maintain these systems.

Detailed water chemistry information about the proposed facility discharges will be described in a separate letter report submittal to the DNR. This submittal is required under section 5.2.6 of the Domtar WPDES permit. The submittal also will include information about water additive changes as required by section 5.3.5 of the Domtar WPDES permit.

2.23 STORM WATER MANAGEMENT

Storm water management will be accomplished as prescribed by the Construction Erosion and Sediment Control Plan and the Post-Construction Storm Water Management Plan completed for the project. These plans are required by NR 216 and NR 151. Both plans are included as attachments to the Water Resources Application for Project Permits submitted to the DNR. These plans meet both DNR and local Village of Rothschild requirements.

2.24 ON-SITE WASTEWATER AND STORM WATER TREATMENT

Wastewater from the biomass facility will be treated at the existing on-site Domtar wastewater treatment facility. This facility provides pH neutralization using lime, grit removal and secondary biological treatment. The secondary treatment system includes two 5 million gallon aeration channels and three secondary clarifiers.

During construction erosion and sediment control will be managed by the installation of silt fencing, inlet protection at catch basins, ditch checks, sediment traps and at a wet storm water detention basin. Stone tracking pads and tire washing will be used to minimize the effects from vehicular traffic.

Post-construction, a combination of grass swales, catch basin sumps, a wet detention basin and indoor wood fuel storage will serve to minimize storm water impacts from the site. The construction of a storage building for the wood fuel provides a long-term best management practice that will minimize the impact of storm water runoff from the biomass facility operations. The swales, catch basin sumps and wet detention basins will treat runoff from areas of the site that may contribute suspended solids loading to the storm water.

2.25 SOLID WASTE HANDLING AND DISPOSAL

Combustion products from the biomass facility consist of bottom ash and fly ash. The quantity of these products is dependent on the ash content of the fuels consumed and the combustion technology. The forest residues which will make up the majority of the fuel are expected to fall in the range of <1% to 7% ash content. Assuming 500,000 tons/year of fuel consumed in a circulating fluidized bed boiler, it is reasonable to expect approximately 20,000 tons/year of ash to be produced. Bottom and fly ash will be handled as separate waste streams.

The bottom ash from a CFB boiler is primarily inert material (rocks, dirt, agglomerated bed sand, etc.) that is too heavy to fluidize. It is estimated that the boiler will produce approximately 1500 tons/year of bottom ash. This material is removed from the furnace bottom by a water cooled conveyor, classified to return usable sand to the boiler, and then conveyed to a roll off waste container. This material will be beneficially reused (primarily as an aggregate replacement) or disposed of in a landfill.

The majority of biomass combustion by-products will consist of fly ash. Alternatives for management of this material fall into two broad categories; beneficial use or disposal.

Beneficial Use Alternatives

The actual physical and chemical properties of the wood ash will be significantly influenced by the characteristics of the biomass fuel (i.e., species, bark, harvest technology) and the configuration/operation of the CFB boiler. However there are well documented cases where wood ash, from a variety of tree species and combustion technologies, is beneficially used in agriculture.

In these cases, the wood ash is marketed as either a liming agent for soil pH adjustment or as a fertilizer. The concentration of plant macronutrients (particularly phosphorus and potassium) in wood ash typically would not limit the agriculture or silviculture application rate. Calcium, on the other hand, and specifically the calcium carbonate equivalence ("CCE"), would be the primary driver that guides the rate at which wood ash can be applied to land. In available marketing literature the CCE of wood ash generally is about one half that of classic agriculture lime. Therefore, to provide the same effective neutralizing value of agriculture lime, wood ash would be applied at approximately twice the agriculture lime application rate. With more than 1.3 million acres of harvested crop land (2007 Census of Agriculture) in Marathon County and the eight surrounding counties, a small share of the agriculture lime market is all that is necessary to beneficially use the entire supply of wood ash from this facility.

The land application of wood ash is regulated by the Wisconsin Department of Natural Resources through Chapter NR 518 Wis. Admin. Code. Chapter NR 518 exempts wood ash facilities, which includes the land application sites, from the regulations when managed under specific conditions such as when it is applied for soil pH adjustment or as a source of plant nutrients. Wood ash is explicitly excluded from the definition of a fertilizer and a soil or plant additive (§ 94.64(1)e and § 94.65 (1)(f)3, Wis. Stats., respectively) and therefore

would require licensing by Wisconsin Department of Trade and Consumer Protection when marketed as an agriculture liming material.

If for some reason land application of wood ash is not possible, an alternative would be to truck the material to either Pleasant Prairie Power Plant or Elm Road Generating Station for ash re-burn. Both of these plants have equipment in place that could handle this material. The amount of carbon in the wood ash is expected to be low (from 3% to 5%) but would still provide heat value. It is expected that the ash from either of the above power plants in southeastern Wisconsin would be 100% beneficially reused. In this way none of the wood ash would need to be landfilled.

Disposal Alternatives

In the event that no beneficial use is possible, landfill disposal would be the contingent option for managing these materials.

Marathon County Landfill is the closest (<10 miles) licensed landfill to the proposed facility. This landfill currently accepts ash from the Domtar facility. The existing landfill includes a monofill for ash disposal but is nearing capacity. The Marathon County Solid Waste Department has initiated siting of a new 2.2 million cubic yard solid waste landfill on the property. Wood ash has been identified as an acceptable waste for the new landfill. In discussions with Marathon County Solid Waste Department staff, at this time if wood ash from a new facility has similar characteristics to the Domtar wood ash, it would be accepted at the landfill. Current gate fee (as of October 1, 2009) at the landfill is $38/ton. However, as ash from utilities and paper facilities is exempt from certain WDNR fees (totaling $7/ton) the gate fee would be approximately $31/ton.

2.26 AGRICULTURAL IMPACTS

There are no ongoing farming or agricultural activities on the proposed site, or within ½ mile radius of the site.

2.27 NOISE

To assess the operational impacts of the proposed facility, a noise study was performed in accordance with the PSCW Protocol for new generation sites. Locations for baseline sound measurements were selected with concurrence of PSCW staff. At total of five locations were selected, representative of the residential areas surrounding the proposed facility.

Manual 10 minutes samples were taken over several days at all five locations, in accordance with the PSCW Noise Protocol. In addition, continuous sound monitors recorded sound levels at four of the locations over a period of nine days. The results of the monitoring were consistent with expected background sound levels for residential areas adjacent to an industrial facility.

Noise level design goals were established at each of the receptor locations, to ensure that necessary noise abatement features are incorporated in the facility detail design. Designing in

accordance to these goals would result in changes to the background that would be just barely perceptible with careful listening.

Additional detailed noise acoustic source information will be collected at reference biomass plants with similar equipment, especially around the various material handling system components, to build a more detailed acoustic prediction model. This information will be used to develop equipment-specific noise attenuation measures, especially for fans, cooling tower, and material handling systems.

The Noise Study is provided in Appendix L. A post-construction noise study will be performed and filed as required by the PSC.

The Village of Rothschild noise requirements are contained in Chapter 3.04 of the Village zoning ordinances, and provided in Appendix K.

Construction noise impacts would be intermittent in nature, primarily sound from diesel engine driven construction equipment. Mufflers on engine driven equipment will be kept in good repair, to minimize this noise. At this time, the preliminary geotechnical data indicates that mat foundations can be used for the project, so it is not anticipated that any deep piles will need to be driven.

Steam blows will be required during start up to clean all boiler and steam path piping prior to connection to the steam turbine. Silencers will be utilized to ensure less than 85 dBA sound levels at the site boundary during these activities. Notification prior to any steam blow will be made to the appropriate authorities, and these activities will be limited to daylight hours.

2.28 SITE LIGHTING

Construction lighting impacts will be minimized by scheduling the majority of activities during daylight hours, augmented with existing mill area lighting. For construction operations that need to take place outside of daylight hours, local lighting will have to be provided to ensure personnel safety. Every effort will be made to minimize glare impacts off site, by the use of directional lighting whenever possible.

Area lighting will be provided to provide personnel safety for plant operation. This will include lights in operating areas within structures, which may become visible through windows or open doors. All external area lighting installed as part of the project will be downward directed to minimize any off site impacts, in accordance with Village ordinance. The only exception is for the chimney, which will likely require obstruction lighting to comply with FAA regulations.

Village zoning ordinance Sections 3.02 and 4.11 describe lighting requirements. These ordinances are included in Appendix K.

2.29 ODORS

There will be no discernible difference in odor from the facility once it is in operation, compared to current site conditions. The major potential sources of odor are the wood fuel, wastewater treatment residue, aqueous ammonia for NOx control, and acid and caustic for water treatment. All of these sources already exist on the site, in similar or larger quantities than those required for the new unit. Odor from these sources will be controlled by enclosing the wood storage area, conveying wastewater treatment residue directly to the boiler, locating water treatment bulk chemical storage indoors, and including vapor recovery for the ammonia tank fill system.

The primary source of odor during construction will be diesel exhaust from mobile construction equipment. Since there is currently significant diesel truck traffic in and out of the site, this will not be discernible. Mitigation measures would include minimizing unnecessary idling of equipment, and maintaining the engines in good mechanical repair.

2.30 FOGGING AND ICING

A cooling tower fogging and icing analysis was performed by AECOM Environment using the Electric Power Research Institute computer model called SACTI. The results of the study indicate ground level fogging and icing potential of approximately 2 hours/ year, which occur with high winds (> 10 m/sec) and high relative humidity. In the report, both a standard wet cooling tower and a plume abated tower were modeled, which demonstrates the improvement to be expected when using a plume abated tower. Because the model was developed for analyzing wet towers, the results for the plume abated tower are conservative, since the model only accounts for the dilution effect of the dry section of the tower, not the increase in temperature of the exhaust stream. Therefore, the predicted extent of visible plumes, fogging, and icing, are likely overstated.

The AECOM report is included in Appendix V, Environmental Reports.

The fogging probability map, icing probability map, $CaCO_3$ deposition probability map, and plume length map are part of the AECOM report.

2.31 MITIGATION MEASURES

The design of the facility includes measures to mitigate off-site impacts of its operations. Wisconsin Electric and Domtar will continue to address issues as they may be raised by the local community.

2.32 DISTANCE TO SCHOOLS, DAY CARE CENTERS, HOSPITALS

There are no schools, day care centers, hospitals nor nursing homes within a ½ mile radius of the Project. There are two schools, Rothschild Elementary School and Saint Mark's Grade School that are located within about one-block outside of the area that depicts the ½ mile radius from the project site.

2.33 PUBLICLY-OWNED LANDS

The Village of Rothschild Village Hall office complex is directly across Grand Avenue (Bus. Hwy. 51) from the project site. The complex houses the Village Administrative offices, Department of Public Works offices, Public Library, and Police department. The Village Fire station is located directly north of the Village hall on Grand Avenue. The Public Works garage is located within the ½ mile radius east of the facility on Leon Street.

There are five public parks within ½ mile of the proposed facility, operated by the Village of Rothschild:

- George Street Park is a 7.5 acre park at George Street and Military Road, ½ mile southeast of the site. It is a developed park with tennis courts, baseball field, soccer field, sledding hill and playground equipment. It includes parking and restroom support facilities.
- River Street Park is a 5 acre park directly south and adjoins the Domtar property, at River Street and Williams Street. It has a playground, pavilion with restrooms, a baseball filed, soccer field and parking.
- Zimpro Park is a 4 acre park with playground facilities, located several blocks southesast of River Street Park on Military Road.
- Tower Park is a 2.5 acre park about ½ mile northeast of the facility on First Street with playground facilities.
- Garske Park is a small undeveloped park located to the west of Zimpro Park, on Birch Street.

Marathon County maintains a hiking/biking path on the west side of the Wisconsin River, in the Town of Rib Mountain. The path runs along the western edge of the Domtar property on the west side of the river. To the east of the river, the path connects to the Cedar Creek Bike and Pedestrian Trail, which runs along the Wisconsin River south of River St. Park.

Domtar maintains a public access boat launch and canoe portage on its land west of the Wisconsin River, next to its hydroelectric dam.

2.34 DEMOGRAPHICS

Population within the project vicinity resides predominantly in the Village of Rothschild south and east of the project site. The population composition is 97% white, with very small percentages of Black, American Indian, Asian, and other races. The population within ½ mile of the project site reflects this same composition. Table 2.34-1 reflects the population statistics by race for Marathon County, residents within ½ mile of the project site, the Village of Rothschild, and the Town of Rib Mountain. The median household income levels within the vicinity of the project range from $36,563 to $52,866. The poverty status for residents within ½ mile of the project site is approximately 4%.

Table 2.34-1 Demographics

Demographic Group	Within 1/2 Mile of Project Site	Rothschild	Rib Mountain	Marathon County
Population	1,668	4,970	7,556	125,834
White	1,610	4,779	7,291	118,079
Black/African American	5	14	9	347
American Indian, Eskimo, Aleut	14	14	16	435
Asian and/or Pacific Islander	31	143	189	5,715
Other	8	20	51	324
Median Household Income	(ave.) 46,893	50,543	61,294	45,165
Persons Below 1999 Poverty Level	(ave.) 60.33	195	125	8,163

Source: Wisconsin Department of Administration, US Census Bureau, University of Wisconsin Department of Rural Sociology Applied Population Lab, North Central Wisconsin Regional Planning Commission

2.35 LOCAL GOVERNMENT IMPACTS

2.35.1 Services to be provided

As stated in Sections 2.21 and 2.22.4, the Village will provide potable water and sanitary sewer service for the Project from existing infrastructure.

All needed emergency services will be provided by the Village of Rothschild, which currently provides these services for the Domtar paper mill.

Wisconsin Electric has met with the Rothschild Fire/EMS Chief to discuss emergency services for the new facility. The Chief stated that the Rothschild Fire/EMS Department is prepared to serve the new plant, since they already provide these services for both the WPS Weston Power Plant and Domtar. Services that the Village provides include response to fire, EMS, boiler implosions/explosions, critical piping failures and chemical spill/release issues.

2.35.2 Infrastructure and Service Improvements

The Village will not need to construct any new facilities or acquire new emergency response equipment to support the plant.

2.35.3 Shared Revenue

The basic shared revenue for power plants placed in service after December 31, 2003 is equal to the plant's name-plate capacity multiplied by $2,000. If the plant is located in a City or Village, the City or Village receives two-thirds and County receives one-third. The splits are reversed if the plant is located in a Township.

In addition to the revenue sharing described above, Wis. Stat. § 79.04(7)(c)1 provides an additional $1,000 per MW to both the municipality and county for plants that derive energy from an alternative energy resource. An additional $600/MW is paid to both the municipality and county if the plant is built on, or on a site adjacent to, "brownfields", which are defined in Wis. Stat. § 560.13(1)(a) as "abandoned, idle or underused industrial or commercial facilities or sites, the expansion or redevelopment of which is adversely affected by actual or perceived environmental contamination."

The site appears to meet the definition of “brownfield” under Wis. Stat. § 560.13(1)(a), as previously interpreted by the Commission. Papermaking operations have been occurring at the site for almost a century, and the facility has been home to a substantial pulping operation for much of that time. The mill site has a long history of industrial use, including historic use as a rail yard.

Although the site is located on riverfront property less than a mile from the Rothschild Village Hall, the existing site has not been developed to date other than use as outdoor storage. As a result, this property can at present time be considered to be underused, relative to its development potential.

The Executive Summary of the Phase I Environmental Site Assessment can be found in Appendix V.

The annual utility shared revenue payment for a 50 MW biomass power facility for the Village of Rothschild would be as follows:

With a brownfield designation: $146,650 [($2,000 x 2/3) + $1,000 + $600] x 50 MW

Without brownfield designation: $116,650 [($2,000 x 2/3) + $1,000] x 50 MW

Marathon County would receive:

With brownfield designation: $113,350 [($2,000 x 1/3) + $1,000 + $600] x 50 MW

Without brownfield designation: $83,350 [($2,000 x 1/3) + $1,000] x 50 MW

The law provides for a cap on annual utility shared revenue payments of $300 per resident for municipalities, and $100 per resident for counties.

2.35.4 Other Benefits

Installation of the new cogeneration facility will help make the paper mill more competitive by reducing production costs, helping to maintain 400 family supporting jobs at the mill and roughly 800 external jobs supporting mill operation. In addition, it is estimated that approximately 150 full time jobs in logging and trucking will be required to provide biomass fuel to the project.

2.35.5 Retired Facilities

The existing four mill boilers and steam turbine plant will be retired once the new facility is operational. As a result of the biomass CFB boiler's air quality technology and the retirement of Domtar's existing boilers, the overall emissions from the mill site is expected to be reduced. The new facility will require about the same staffing level for operation and maintenance, so it is not anticipated that there will be any significant employment changes at the mill site with the retirement of the existing facilities.

2.36 CONSTRUCTION TRAFFIC

All site construction traffic will utilize the south mill entrance off of US Hwy Business 51 (Grand Ave.). Existing mill roadways are adequate to handle all expected large and/or heavy load vehicles delivering construction materials. It is expected that most deliveries will arrive from the north, using the Hwy 29 off ramp from I-39, although some may come from the south. No improvement to Business 51 will be required to handle expected heavy or oversized loads.

Rail access exists at the site, so there is the potential for some materials to be delivered by rail and off loaded at the site, using the existing mill rail siding.

Parking for the construction workforce will utilize existing mill parking areas. A dedicated craft parking area will be established adjacent to the south warehouse. Between 100 and 300 cars are expected for the workforce, primarily on day shift between 6 am and 7 pm, depending on the work schedule. Limited back shift and weekend work is expected. Vehicles on the construction site will be limited to those needed for actual construction activities (pickups and tool or supply trucks). No personal vehicles will be allowed in the active construction areas.

Material deliveries will normally be limited to Monday through Friday, during day shift hours, to ensure personnel are available for off loading. Normal truck volumes will be 5 to 10 per day. Most deliveries will be by semi-trailer. There will be periodic high volumes of concrete trucks during foundation construction, and triaxle dump trucks during foundation excavation and back fill activities. Most earthmoving activity will be excavation, since the site is relatively flat. Some grading activities will be required, but they are not extensive.

2.37 TRAFFIC DURING OPERATION

Operation of the new facility will result in increased truck traffic, as well as a change in traffic volumes at the various mill entrances. The majority of the increase is due to the number of biomass fuel deliveries, but there will also be an increase in ash trucks, sand trucks, and chemical deliveries. No significant change is expected in employee traffic counts. If the facility utilizes the waste water treatment plant residue as an opportunity fuel, traffic associated with disposal of the residue will be eliminated.

The following tables illustrate the annual traffic volumes and locations from current to projected operation. The categories represent the major volume areas received and delivered by truck.

Table 2.37-1 Annual Current and Future Truck Traffic

Current Operation	North Entrance	South Entrance	Total
Log trucks	8,700		8,700
Biomass	2,600		2,600
Finished Paper		7,800	7,800
WWT Residue		1,100	1,100
Ash	500		500
Pulp Screenings	500		500
TOTAL:	12,300	8,900	21,200
Future Operations			
Log trucks	8,700		8,700
Biomass	0	18,000	18,000
Finished Paper		7,800	7,800
WWT Residue		0	
Ash		1,000	1,000
Pulp Screenings	0		
Aqueous Ammonia		125	125
Other Chemicals & Sand		285	285
TOTAL	8,700	27,210	35,910

Assuming a Monday through Friday delivery schedule the proposed power plant will increase daily truck traffic from approximately 35 trucks to about 110 trucks through the mill's south entrance. This estimated 75 truck per day increase will be primarily biomass fuel delivery in the form of forest residue, manufacturing sawdust/wood waste and other suitable wood waste sources.

An approximate 12-hour, 5-day delivery schedule is anticipated, with trucks arriving between the hours of 6am and 6pm. The estimated increase in daily truck traffic entering the south entrance, Monday through Friday, will average about 6 trucks per hour. Biomass truck unloading capacity is 12 trucks/hour. On site truck staging space and traffic control will provide for sequencing truck weigh-in, unloading and weigh-out.

Peak-hour (6 am – 8 am and 3 pm – 5 pm, Monday through Friday) traffic volumes at the mill's south entrance for current and future conditions (includes north and south bound truck ingress/egress) are estimated to be:

Table 2.37-2 Peak-Hour Truck Traffic

	Current In	Current Out	Future In	Future Out
Peak-Hour AM	39	7	56	19
Peak-Hour PM	6	42	13	58

Application has been made with the Wisconsin Department of Transportation to determine the need for a Traffic Impact Analysis, due to the proposed increased usage of the existing south entrance. To accommodate the increased truck traffic, Wisconsin Electric would like to improve the existing south mill entrance to accommodate safe and efficient truck traffic entry and exit from the mill site. Improvements proposed may include a combination of expanded turn lanes, realignment of the existing south entrance and widening mill internal roadways.

A traffic signal analysis based on projected traffic flow on Business 51, Weston Avenue and the south mill entrance does not in itself support installation of a traffic signal at this intersection. However, with increased truck traffic crossing the active railroad tracks and other safety considerations, a traffic signal will be proposed. The Village of Rothschild concurs with the desirability of locating a traffic signal at this intersection, and this approach will be pursued with the Department of Transportation.

2.38 PERMANENT CHANGES REQUIRED

The traffic study recommends that traffic signals be installed at the Business 51/Weston Avenue intersection, to safely allow trucks to exit the property during plant operation. The traffic signals would also help facilitate the entrance and egress of the construction workforce. Implementation of signals will require the approval of the Wisconsin Department of Transportation.

No changes to the existing rail access to the mill are anticipated for either construction or operation of the facility.

3.0 ELECTRIC TRANSMISSION SYSTEM

Transmission interconnection study reports received to date are included in Appendix S, Transmission. Additional reports will be provided as they are completed.

Following is a general description of the transmission line facilities required for full operation of the proposed project, for both proposed options:

- For the ATC option, ATC will construct a new 3 breaker, straight bus, 115 kV substation on the Domtar property, including control house with necessary protective relaying. The substation will be connected to existing 115 kV line Z52 by a loop feed, on new single pole structures. A preliminary route for the connection is shown on maps in Appendix J. The connection will be between the Sherman Street and Morrison Avenue substations, approximately ½ mile west of the Project site.
- For the WPS option, WPS will construct a new 3 breaker, 46 kV substation on Domtar property, adjacent to the Project. The existing mill radial feed from Military

Road and Hwy. 51 will be replaced with a loop feed from the same location, utilizing existing right of way. Metering and relaying details are still be evaluated as part of the ongoing engineering study being performed by WPS.

4.0 OTHER

4.1 LISTS

The following lists are provided in Appendix M:

- Property owners and residents (including public property) within 1 mile of the Project boundary.
- Public property, such as schools or other government land within ½ mile of the Project boundary
- Clerks of villages, townships, counties and planning commissions affected.

Spreadsheets of these lists are provided separately to the PSC.

4.2 PUBLIC OUTREACH

The following is a chronology of notable interactions with the public constituencies. This discussion includes interactions with Rothschild residents and community leaders in relation to project information distribution.

Sept. 1, 2009: Project Announcement
Wisconsin Electric, Domtar and Governor Jim Doyle held a joint press conference at the Village Hall in Rothschild, Wis. to announce the plans for construction of the biomass energy project. In addition to Governor Doyle and representatives from Wisconsin Electric and Domtar, approximately 50 people attended the press conference including local and state government officials. Various local and state-wide media outlets covered the announcement.

In attendance: Wisconsin Department of Natural Resources Secretary Matt Frank, State Senator Russ Decker, State Representative Donna Siedel, Representatives of the local Chamber of Commerce and Labor

Jan. 21, 2010: Meeting with Rothschild Village Officials
This meeting was scheduled at the request of Wisconsin Electric and Domtar to provide local officials with an update on the biomass energy project and to inform local leaders of upcoming community outreach activities. Copies of project fact sheet and project contact card were left with all attendees.

In attendance: President Neal C. Torney, Trustee Dan Mortensen, Trustee James Keleske, Trustee Mutch Owen, Commissioner Terry Traska, Commissioner Mike Carson, Board Trustee Arlene Paulsen, Board of Appeals Chairman David Yolitz, and Board of Appeals member Brian Berg. Rib Mountain officials were invited but did not attend.

Jan. 25, 2010: Village of Rothschild Web Site Posting
Copies of the Project fact sheet and project contact information (toll-free phone number and e-mail) were provided and made available for residents at the Village Hall. The information also was posted on the Village's Web site at http://rothschildwi.com/

Jan. 25 – Feb. 19, 2010: Door-to-Door Visits
Wisconsin Electric representatives conducted door-to-door visits to inform Rothschild residents and address concerns related to the Project. A total of 514 houses were visited within a half-mile radius of the proposed project site. A fact sheet with a Project overview and direct project contact information were left at each residence whether anyone was home or not.

Feb. 8, 2010: Mail Open House Invitation
Invitations to the Biomass Energy Project Open House were sent in the form of a postcard to all residents within a one-mile radius of the proposed facility site, as well as to Rothschild and Rib Mountain officials. WAOW-TV, the Wausau Daily Herald, WSAU Radio and City Pages ran stories in advance of the open house that included information about the event.

Feb. 9, 2010 - Ongoing: Follow-up Meetings with Residents
One-on-one follow-up meetings between Rothschild residents and Wisconsin Electric/Domtar representatives have been scheduled to provide further information about the Project. Topics discussed include air quality, traffic, noise, property value and timeline. Meetings are scheduled based on the request and availability of the residents. Approximately 92 one-on-one follow-up visits have been conducted to date.

Feb. 19, 2010: D.C. Everest School District Meeting
This meeting was requested by the D.C. Everest District Superintendent to provide district faculty with an overview of the biomass energy project. Faculty members had specific questions related to air quality, traffic and emergency planning, and requested contact information they could share with teachers, parents and students. We provided the project fact sheet and contact card with the project hotline number and e-mail address, as well as the Web page address they could refer to for information. District faculty also received a preview of the information to be displayed at the public open house.

Representatives from Domtar and Wisconsin Electric are coordinating a presentation about biomass energy to D.C. Everest High School science classes, tentatively scheduled for late April or early May. A presentation to middle school students also is being considered.

In attendance: Superintendent Dr. Kristine Gilmore, Asst. Superintendent Dr. Thomas Owens, Supervisor of Facilities Jeff Belott, Supervisor of Maintenance Terry Marcott, and Rothschild Elementary Principal Ronald Foreman.

Feb. 19, 2010: Domtar Employee Open House
An open house held exclusively for Domtar employees took place from 11 a.m. to 2 p.m. at Domtar's Rothschild mill - 86 employees signed in at the event. Employees had previously received the project fact sheet and came to the event with specific questions about facility

operation and project timeline. Displays providing project information were set up for viewing and project representatives from Domtar and Wisconsin Electric were on hand to answer employee questions. Comments by Domtar employees were very positive and supportive of the project.

Feb. 19, 2010: Meeting with Village Officials
This meeting was held to review project details with village officials, discuss any new questions or issues of concern, and provide a preview of the public open house. The discussion included a review of traffic, sound, air quality, fuel types, emergency procedures and project timeline.

In attendance: Village President Neal Torney, Administrator of Public Works Tim Vergara and Chief of Police William Schremp

Feb. 20, 2010: Biomass Energy Project Open House
A public open house was held at the Rothschild Holiday Inn and Suites for the residents of Rothschild and surrounding communities to learn more about the project. The event was attended by more than 200 guests - with 186 guests signing in and an estimated 50-75 more who opted not to sign in. Guests learned more about the project through viewing several displays and had the opportunity to speak directly with Wisconsin Electric and Domtar project team members about their questions or concerns. Their issues are primarily focused on the facility expansion within the existing footprint of the site and its impact on their property values due to added noise, traffic, access to their subdivision and air emissions. The comments expressed at the event were generally neutral or positive in nature with the exception of a small group of residents who have indicated their opposition to the project. Various local and state government officials attended the event as well as local union representatives. The event was covered by three media outlets: Wausau Daily Herald, TV-9 and the Business News of North Central Wisconsin.

In attendance: Village of Rothschild President Neal Torney and several Trustees, State Senator Russ Decker, State Representative Donna Siedel, Local IBEW Business Manager David Northup, United Assoc. Plumbers and Steamfitters Business Manager Terry Hayden.

Copies of the following public outreach materials are provided in Appendix N.

1. Announcement press release
2. Corporate bios
3. Fact sheet
4. Draft renderings
5. Contact card
6. Open house invitation
7. Open house displays

4.3 PLANS AND SCHEDULES COMMUNICATING WITH THE PUBLIC

A multi-faceted communications outreach effort will be used to inform and educate those affected by the project. This will include some of the following activities:

- Meetings to inform and educate stakeholders and general public

- One-on-one communications with Rothschild residents
- Project updates in the form of direct mail pieces (newsletters, postcards)
- Web site dedicated to information regarding the project: www.we-energies.com/biomass
- Toll-free project hotline (877-380-0522) and project e-mail (biomass@we-energies.com) available for residents with specific questions

4.4 LOCAL MEDIA INFORMED ABOUT THE PROJECT

Name	Contact Info	Media Type
Wausau Daily Herald	Peter Wasson 800 Scott St. Wausau, WI 54403 715-845-0653	Newspaper Attended Press Conference – Filed story. Editorial, follow-up stories
Wisconsin Rapids Tribune	Allen Hicks Physical address- 2201 1st Ave. Mailing address- P.O. Box 8090 WI Rapids, WI 54495-8090 715-422-6724	Newspaper Follow-up story filed 9/17/09
Daily Reporter	Chris Thompson 225 E. Michigan St. Suite 540 Milwaukee, WI 53202 414-225-1818	Newspaper Filed story – 9/03/09
Milwaukee Journal Sentinel	Tom Content 333 W. State Street Milwaukee, WI 53203 414-224-2098	Newspaper Attended Press Conference – Filed story, editorial and follow-up stories
Milwaukee Business Journal	Peter Millard 825 N. Jefferson St. Suite 200 Milwaukee, WI 53202 414-908-0567	Newspaper Filed story – 9/03/09
Bay View Compass	Katherine Keller P.O. Box 070645 Milwaukee, WI 53207 414-489-0880	Newspaper Filed story – 9/03/09
Marshfield News Herald	Jonathon Gneiser 111 W. 3rd St. Marshfield, WI 54449 715-384-3131 x334	News paper

Name	Contact Info	Media Type
City Pages	News@citypages.com (No direct contact) 401 North Third St. Suite 550 Minneapolis, MN 55401 612-375-1015	Newspaper
Associated Press	Roger Schneider 111 E. Wisconsin Ave. Suite 1925 Milwaukee, WI 53202 414-225-3580	Filed story – 9/03/09
Business News of North Central Wisconsin	Larry Desch P.O. Box 1021 Wausau, WI 54402 920-819-7747	Magazine
Wisconsin Public Radio – Wausau (Route 51)	Michael Leland 821 University Ave. Wausau, WI 53706 608-263-7928	Radio Attended Press Conference – Filed report Hosted interview on Route 51 Radio Show - 9/17/09
WSAU Radio	Chris Conley P.O. Box 2048 Wausau, WI 54402 715-842-1672 x417	Radio
WSAW-TV	Dennis Dalsky 1114 Grand Ave. Wausau, WI 54403 715-845-0077	Television Attended Press Conference – Filed reports
WAOW-TV	Casey Lake 1908 Grand Ave. Wausau, WI 54403 715-843-9203	Television Attended Press Conference – Filed reports

APPENDICES